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# USAID EDUCATION DATA ACTIVITY EARLY GRADE READING ASSESSMENT

## 2021 Midline Report

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# USAID EDUCATION DATA ACTIVITY EARLY GRADE READING ASSESSMENT

2021 Midline Report

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## ACRONYMS

AMEP	Alternative Modes of Education Provision
CDC	Curriculum Development Centre
CLSPM	Correct Letter Sounds per Minute
CNONWPM	Correct Non-Words per Minute
CSSPM	Correct Syllable Sounds per Minute
CWPM	Correct Words per Minute
DO	Development Objective
ECE	Early Childhood Education
ECZ	Examinations Council of Zambia
EDC	Education Development Center
EGR	Early Grade Reading
EGRA	Early Grade Reading Assessment
EMIS	Education Management Information System
GPF	Global Proficiency Framework
GRZ	Government of the Republic of Zambia
IR	Intermediate Result
IRR	Inter-Rater Reliability
LoI	Language of Instruction
MESVTEE	Ministry of Education Science, Vocational Training and Early Education
MoE	Ministry of Education
MSI	Management Systems International
OLS	Ordinary Least Squares
ORF	Oral Reading Fluency
QCO	Quality Control Officer
RTI	Research Triangle Institute
RTS	Read to Succeed
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SDG	Sustainable Development Goal
SSME	Snapshot for School Management Effectiveness
TTL	Time to Learn
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
ZANEC	Zambia National Education Coalition

## EXECUTIVE SUMMARY

This report provides results from the 2021 Midline Early Grade Reading Assessment (EGRA), which is a follow up to the Zambia 2018 Baseline EGRA Report. The Midline EGRA tracks the progress of USAID’s Let Read Project in improving reading outcomes among targeted Grade 2 learners in five Zambian provinces: Eastern, Muchinga, North-Western, Southern, and Western. The Midline EGRA compares the 2018 Grade 2 cohort with the 2021 Grade 2 cohort and measures the changes in learner performance in core reading skills in all USAID Let’s Read intervention provinces. Specifically, this 2021 Midline EGRA intends to address the following research questions:

1. What is the change in Grade 2 learners reading performance from baseline to midline?
2. To what extent does gender or school type affect reading performance?
3. What are the midline reading proficiencies in the languages of instruction (Lols) relative to the Ministry of Education (MoE) national benchmarks and USAID Let’s Read Project targets?
4. What are the significant predictors of oral reading fluency (ORF)?

An additional goal of this Midline EGRA is to support the sustained and timely generation of EGRA data in Zambia. To this end, this Midline EGRA was organized and executed to sustainably build the institutional and human capacity of the Examinations Council of Zambia (ECZ) to independently conduct national EGRAs and provide timely information about student reading competencies. DevTech Systems, Inc., operating as USAID Education Data, conducted this Midline EGRA with its sub-contractors Management Systems International (MSI), the University of Zambia, Institute for Economic and Social Research, and ECZ.

The Midline EGRA Assessment was scheduled for October 2020, two years into implementation of the USAID Let’s Read Project. However, the assessment was postponed due to school closures as a result of the COVID-19 pandemic. Evaluating student performance in 2021 implies analyzing the impact of the pandemic on reading skills of learners that did not experience a regular Grade 1, a critical year for learning foundational reading skills.



### METHODS

This quantitative study uses a one-group pretest posttest design that compares baseline and midline reading scores for Grade 2 learners from different cohorts (2018 and 2021) using the same sample of schools participating in the USAID Let’s Read Project intervention in the seven Lols—Chitonga, Cinyanja, Icibemba, Kiikaonde, Lunda, Luvale, and Silozi—across five provinces of Zambia. There is no comparison or control group. The study collected quantitative baseline data from October to December 2018, and midline data was collected during the same period in 2021. To respond to the research questions, USAID Education Data collected early grade reading data using the EGRA and supplementary learners, teacher, head teacher, and school inventory questionnaires. The USAID Let’s Read Project intervention in the sample schools began in 2019 and is expected to continue until 2023.

In 2018 assessment team administered the EGRA assessment to 15,079 learners, and in 2021 to 14,949 learners, for a total of 30,028 learners from the same schools receiving the USAID Let’s Read Project intervention. Out of the 816 schools originally assessed in 2018, USAID Education Data assessed 786 in 2021. A total of 30 schools attrited due to school closures, changes in Lols used to assess the schools at baseline, inaccessibility due to the rains, among others. The assessment team controlled for differential attrition by conducting robust statistical analysis (see Annex 4) to compare average scores from the 30 schools to the rest of the baseline sample and found that attrition should have no impact on the overall performance trends found at midline.



The major limitations of the research strategy are sample attrition in the school samples with Lunda and Luvale Lols, inability to compare average score results between Lols, inability to calculate generalizable results at a level different than Lol, such as province and district, and response bias in the learner and teacher questionnaires. These limitations are further described in the methodology section.



## KEY FINDINGS

**There has been a decrease in learners' performance in initial reading skills and higher-level reading skills from baseline to midline, while pre-reading skills have remained unchanged.** In terms of initial reading skills, performance has

decreased across all three subtasks assessed, evidenced by lower average midline scores as compared to baseline scores for letter sound recognition, syllable sound recognition, and non-word reading. Reduced performance in initial reading skills has led to reduced performance in higher-level reading skills, which is evidenced by decreases in average scores for ORF and reading comprehension between the baseline and midline. All differences between baseline and midline average scores are statistically significant though there is variability in the scale of change for reading fluency and comprehension reductions across all languages. Performance in pre-reading skills remained unchanged as evidenced by average listening comprehension scores.

**At midline, learners attending government-run schools performed better than learners from community-run schools in all EGRA subtasks.** The results found that differences in average scores for all initial reading and higher-level skills sub-tasks were statistically significant. At midline, there were wide gaps in performance by school type, which varied in size depending on the EGRA subtask. Learners coming from Government of the Republic of Zambia (GRZ) schools had an average score of 7.3 correct letter sound identification, which is almost 80 percent higher than students from community-run schools, who received an average score of 4.0. Learners from GRZ schools performed about 10.2 percent better than students from community schools in reading comprehension. Considering all tasks, the gap in reading performance between learners from GRZ schools and community schools has decreased from baseline to midline.

**At midline, girls and boys are performing at basically the same level in initial and higher-level reading skills.** Overall, girls had higher average scores than boys in all EGRA sub-tasks except for listening comprehension. However, with the exception of listening comprehension and letter sound identification, these differences are not statistically significant. Furthermore, both girls and boys experienced a 30 percent reduction in ORF from baseline to midline.

**Approximately four percent of Grade 2 learners meet the MoE stipulated minimum level reading proficiency at midline.** This represents a decrease from the baseline assessment, which found that about eight percent of students reached the minimum level reading proficiency in non-word reading, reading fluency, and reading comprehension. **No student reached the proficient reader (or fluent reader) benchmark.** This reduction is consistent for all languages of instruction assessed, all of which show decreases in the percentage of learners achieving the MoE benchmarks at midline. Overall, less than 1 in 20 students is reading at the minimum proficiency level.

**Factors associated with oral reading fluency include reading to others at home, reading a book at school, and reading at home.** Learners who frequently read to others at home increased their reading fluency by around 2.7 cwpm. Similarly, learners who reported practicing reading at school the day prior to the EGRA assessment read about 2.9 cwpm more than learners who did not. These factors are closely linked to having materials available to read at home and at school. This evidences the need to continue improving access to high quality reading materials both at home and at school, and the need to sensitize both teachers and parents to support young learners to practice reading.

## Results by EGRA sub-task show:



**ORAL READING FLUENCY.** Overall, the average score for ORF was 5.9 correct words per minute (cwpm) at baseline and 4.2 cwpm at midline. This decrease of 1.7 cwpm is statistically significant. The MoE benchmark for a Grade 2 learner with the minimum proficiency level (emergent reader) is 20 cwpm. At midline, only 7.7 percent of students reached that level. Thus, results indicate that the Grade 2 learner cohort in 2021 is reading with less speed and accuracy than the cohort from 2018, and that on average, Grade 2 learners are reading well below the national minimum proficiency level. Reductions from baseline results were statistically significant for the following Lols: Cinyanja, Kiikaonde, Luvale and Silozi. Additionally, 1.7 fewer correct words per minute is equivalent to a 29 percent reduction in cwpm, which means that at midline, on average, students were only reading approximately two thirds of what they read at baseline.



**READING COMPREHENSION.** The average score for reading comprehension was 10.6 percent at baseline, and 8.1 percent at midline. This decrease of 2.5 percentage points is statistically significant. The MoE benchmark for a Grade 2 learner with the minimum proficiency level (emergent reader) is 40 percent in reading comprehension. At midline, only 10.5 percent of learners reached that level. Thus, results indicate that the Grade 2 cohort in 2021 is understanding less of what they read than the 2018 cohort, and that on average, Grade 2 learners' reading comprehension is well below the national minimum proficiency level. Reductions were statistically significant for the Cinyanja, Kiikaonde, Luvale and Silozi Lols. Additionally, a reduction of 2.5 percentage points in average reading comprehension scores represents a 24 percent decrease, which means that at midline, on average, students only understood about 75 percent of what they were understating at baseline.



**LISTENING COMPREHENSION.** At midline, learners were able to answer on average 41.6 percent of questions correctly (equivalent to two comprehension questions) compared to 41 percent at baseline. Although small, the increase is statistically significant. Results by language show that, on average, learners in Kiikaonde continued to perform better than any other language and were able to answer 51.6 percent of questions correctly (equivalent to 2.5 questions). However, this is a 6.6 percentage point decrease compared to baseline scores and the difference is statistically significant. Learners in Silozi also experienced a similar decrease in listening comprehension performance, going from 42.3 percent at baseline to 37.8 percent at midline. At 37.5 percent and 37.8 percent respectively (equivalent to 1.9 questions), learners in Cinyanja and Silozi scored the lowest in listening comprehension.



**LETTER SOUND IDENTIFICATION.** At midline, there was a small reduction in the average number of letter sounds that learners were able to identify correctly in a minute compared to baseline scores. On average, learners were able to correctly identify 6.6 correct letter sounds per minute (clspm). This is a 0.3 clspm reduction from the baseline that is statistically significant. This indicates that learners continue to struggle to identify the correct sounds associated with each of the letters presented to them. Differences between baseline and midline results do not vary significantly across the languages, and only the 1.6 clspm decrease in Silozi is statistically significant.



**SYLLABLE IDENTIFICATION.** Overall, the average score at midline was 8.1 correct syllable sounds per minute (csspm), a statistically significant 2.2 reduction in csspm from the average baseline score. By language, learners in Luvale and Silozi presented the highest performance reduction in this task, with a statistically significant decrease of 7.2 csspm for Luvale, and a statistically significant decrease of 5.4 csspm for Silozi. There is also a statistically significant reduction of 2.8 csspm in Kiikaonde. These results indicate that learners are recognizing and pronouncing a limited number of syllables, with greater gaps in performance than in the baseline study.



**NON-WORD READING.** On average, at midline, learners could read 3.9 correct non-words per minute (cnonwpm) of the 50 words that were presented to them, compared to 4.4 cnonwpm at baseline. This reduction is statistically significant. The MoE benchmark for a Grade 2 learner with the minimum proficiency level in non-word reading (emergent reader) is 15 cnonwpm. At midline, only 7.6 percent of learners reached this level. Thus, results indicate that on average, Grade 2 learners' phonetic decoding ability is well below the national minimum proficiency level. At midline, learners in Icibemba continued to score the highest in this task at 5.8 cnonwpm (a 0.6 reduction from the baseline result), while learners in Kiikaonde continued to score the lowest with only 1.9 cnonwpm (a statistically significant 1 cnonwpm reduction from the baseline result). Luvalé and Silozi learners also presented statistically significant reductions of 2.8 and 2.2 cnonwpm respectively from baseline results in this subtask.

**SIGNIFICANT PREDICTORS OF ORAL READING FLUENCY.** Individual, family, and school characteristics significantly associated with ORF are summarized below. No statistically significant difference in ORF scores was observed between girls and boys and between learners who ate breakfast at home the day of the test and those who did not, and learners who attended a school that had a feeding program and those who did not.

<b>Practicing Reading at home</b> <ul style="list-style-type: none"><li>• Highest impact on reading fluency. Learners who read to others at home frequently increased their reading fluency by around 2.7 cwpm.</li></ul>	<b>Having materials at home</b> <ul style="list-style-type: none"><li>• Increases the probability of practicing reading at home and can increase reading fluency by about 0.65 cwpm.</li></ul>	<b>Practicing Reading at school</b> <ul style="list-style-type: none"><li>• Learners who practiced reading at school the day prior to the EGRA assessment read almost 3 cwpm more than learners who did not.</li></ul>
<b>Absenteeism</b> <ul style="list-style-type: none"><li>• Students who missed classes read approximately 0.6 fewer cwpm than those who did not.</li></ul>	<b>Learning during COVID</b> <ul style="list-style-type: none"><li>• Only 27 percent of learners reported receiving any kind of lessons while schools were closed. Learners that received lesson during COVID had an increase of 0.8 cwpm.</li></ul>	<b>Socioeconomic characteristics</b> <ul style="list-style-type: none"><li>• With each one-point increase in the socioeconomic characteristics of their family, learners increase their reading fluency by 0.18 cwpm.</li></ul>
<b>GRZ School</b> <ul style="list-style-type: none"><li>• Learners from GRZ schools achieved 0.27 more cwpm than learners from community schools.</li></ul>	<b>Teacher has access USAID Let's Read Project resources</b> <ul style="list-style-type: none"><li>• Learners who had teachers with access to Let's Read materials achieved almost one cwpm more than peers without these teachers.</li></ul>	<b>Teacher Lol different than mother tongue (MT)</b> <ul style="list-style-type: none"><li>• Learners whose teachers teach in a language of instruction different than their mother tongue scored on average 0.35 fewer cwpm than learners whose teachers provide instruction in their mother tongue.</li></ul>



## RECOMMENDATIONS

**Develop a comprehensive approach to teaching and monitoring foundational reading skills.** Policymakers and practitioners should focus on supporting learners to develop print concepts, phonological awareness, phonics, and word recognition, as a strong foundation for oral reading fluency by ensuring national education policies include explicit reading interventions and guidelines for education leaders, school administrators, teachers, learners, and parents.

**Provide explicit training on how to teach reading skills, implement regular assessments to screen and identify underperforming learners, and implement evidence-based**

**individualized or intensive reading interventions.** While global evidence suggests teacher trainings and a strong performance screening and monitoring system are necessary to prepare successful readers, many teachers in developing countries do not receive comprehensive training that focuses on teaching, assessing, and implementing reading interventions (Kim et al. 2016). At midline, only one third of teachers (35 percent) reported that they had participated in an in-service training for early grade reading in the last year, and the same percent had received a coaching visit in the last year. Therefore, relevant stakeholders in education, including the MoE, should train teachers on how to provide explicit instruction covering the five reading skills: phonics, phonemic awareness, vocabulary, fluency, and comprehension; this can be done through in-service continuous professional development and pre-service training in teacher training institutions. In this regard, the MoE officials trained by the USAID Let's Read District Reading teams should continue to provide support to teachers to encourage them to implement these skills in the classroom as well as monitor and evaluate their performance on a regular basis.

**The GRZ should revamp its performance tracking system to continuously monitor and identify schools and teachers that require individualized or intensive interventions to improve reading.** Training teachers needs to be complemented with a system adjustment to continually screen and identify learners that need remedial instruction. Once learners are identified, a response to intervention programs needs to take place in which schools and local education stakeholders are notified of the cases that need additional support and remedial instruction. The GRZ should consider evidence-based individualized interventions, such as multiple and extended instructional sessions, extensive reading practice with one-on-one instruction, small reading groups, etc. (Wanzek, Otaiba, & Gatlin, 2016). The MoE should continuously monitor learner performance through the performance tracking system to identify schools and teachers that require individualized or intensive interventions to improve reading. MoE should work closely with the USAID Let's Read project to determine how the MoE can enhance its performance tracking system.

**Encourage teachers, parents, and household members to support learners to practice reading at school and at home.** Similar to baseline findings, this midline study found that reading fluency scores improve when learners practice reading at school or at home. This finding suggests the need to strengthen the relationship between the home and school environment, to continue to improve access to reading materials, and to create opportunities for community level programs to support children's exposure to reading at home by encouraging parents and guardians to read to their children on a regular basis and vice-versa.

**Improve access to adequate and appropriate reading materials and increase their use at school.** In partnership with the MoE, the USAID Let's Read project is developing and providing reading packages and teaching and learning materials for Early Childhood Education (ECE) to Grade 3 learners. These materials include those previously developed by the MoE (core and supplementary), as well as materials newly developed by the project. The project is working with both hard copy and digital versions of the materials on tablets for distribution across all the schools in the five provinces where USAID Let's Read is implemented. These textbooks and appropriate reading materials should be made more readily available for children to read, and schools should make provisions for learners to read these books at home. In addition, there is a need to understand whether teachers are implementing USAID Let's Read lessons from the literacy instructional model, as well as the level of distribution of the supplementary reading material and whether learners are accessing and reading the books in class and if they can also read the books at home.

**Develop language-specific benchmarks to account for inherent differences among Lols.** The MoE benchmarks developed in 2015 apply uniformly across all seven GRZ-designated Lols. However, inherent structural differences between languages cause learner reading scores to differ by language. Therefore, benchmarks should vary by language. While an overall target across languages could be used,

setting benchmarks by language will help account for inherent language differences and facilitate better monitoring of changes over time. Furthermore, there is a need to align the competencies and assessments in the primary literacy curriculum for all the grade levels and the EGRA assessments in the seven languages of instruction to the Global Proficiency Framework (GPF). Through policy linking, the MoE can link different student assessments to the GPF, which provides global minimum proficiency levels—below partially meets, partially meets, meets, and exceeds global minimum proficiency—in reading and mathematics for learners from Grades 1 to 9. Policy linking includes the following processes: a) align curriculum content and assessments to the GPF through standardized procedures; b) match each of the assessment items with the appropriate levels and descriptors of the GPF; and c) set global benchmarks for Zambia using standardized procedures.

These benchmarks are important because they will enable Zambia to provide country-level assessment data for reading indicators that will feed into global student learning outcomes like UN Sustainable Development Goal (SDG) 4.1: By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. This will enable the country to gauge its performance in relation to local and international standards toward the attainment of this SDG. The MoE should lead this process with support from education stakeholders.

**The MoE should increase support to community schools.** Results from the Midline EGRA highlight that learners from community schools are consistently performing at lower levels than learners from government schools, and there is a statistically significant higher percent of non-readers in community schools than government schools. Government support to community schools has increased in recent years, but also remains uneven and inadequate, often due to confusion around national policy (USAID, 2016). While community schools report receiving increasing amounts of support from the government, resource allocations to community schools are largely driven by the “goodwill” of district education offices rather than the relative needs of a school or by a national policy. Community schools are often not receiving adequate material and human resource support from the MoE. Thus, the MoE should assign increased funding and resources to community schools in terms of teacher training and teacher allocations, as well as infrastructure and materials.

Given the impact of the COVID-19 pandemic on the education sector, in addition to the government’s current COVID-19 strategy, the MoE should consider the following five components to ensure that all learners, particularly the most vulnerable, have access to robust, high-quality education in the medium- to long-run. The five components are: 1) **Learning recovery:** There is a need to devise policies that can help accelerate current remedial interventions in schools that are aimed at helping learners catch up on lost schooling time. 2) **Maintaining student retention in schools:** Government should strengthen systems at all levels (school, zone, district, and provincial) that feed into the Education Management Information Systems (EMIS) to better monitor learner retention. In the short term, the government should improve information uptake from the schools on learner enrollment, performance (based on formative and summative assessments), and dropouts (number, nature, and causes) in schools across the country. An understanding of factors that precipitate school dropout will help the government provide the appropriate interventions at school and national level, to mitigate this issue. 3) **Hybrid learning schemes:** The MoE should also consider measures for rebuilding the education system in the long-term, accounting for changes that the pandemic has brought into place. 4) **Teacher training:** Government, collaborating with teacher training colleges, must focus teacher trainings on pedagogical practices that foster autonomy, motivation, and students’ ability to learn how to learn. 5) **Support for families:** The government should develop strategies on how to better engage and work with parents and guardians to impart practices that support literacy in the home environment.



## I. INTRODUCTION

Literacy in Zambia has been a subject of concern for some time due to low literacy levels observed among Zambian learners, especially those in public primary schools (SACMEQ, 1995, 2000, 2007, 2010; G2 NAS, 2014, 2016, 2018,). In response, the Government of the Republic of Zambia (GRZ) has taken several steps to improve learner performance in literacy at the primary level. In 2014, the Zambian Ministry of Education (MoE) introduced the Primary Literacy Program (PLP) as a reading strategy to improve learning outcomes. This PLP builds on lessons learnt from a predecessor Primary Reading Program (PRP), introduced in 1999. The PRP was designed so that learners in the first grade were taught to read and write in a familiar language before transitioning to English in the second grade. However, this strategy proved ineffective as reading scores among Grade 2 and 3 learners continued to be extremely low, with children largely unable to read at the expected grade level.

The current policy, PLP, aims to address the shortcomings of the PRP by promoting the use of seven local Languages of Instruction (LoI) from Grades 1 to 4 while using English as the official LoI from Grade 5 to tertiary education. Learners in these lower grades are taught literacy and numeracy in the designated LoI for the district or province in which the school is located. Using this strategy, the MoE seeks to ensure that learners acquire foundational reading skills in the designated LoI in the school or local language used in the area of the school or district.

USAID/Zambia has supported the GRZ to conduct several Early Grade Reading Assessment (EGRA) studies. The MoE, together with other partners, has conducted other administrative studies and assessments to monitor national progress in reading. A chronological account of these EGRA studies and their results is presented in Annex 3.

The USAID Education Data Activity started in April 2018 to provide education assessment, data management, research, and evaluation services to support the USAID Let's Read Project. The objective of the project is to conduct two large-scale EGRAs and strengthen the capacity of the Examinations Council of Zambia (ECZ) and the MoE to track and collect education data to improve learner outcomes in Zambian public schools. The goal of the USAID Let's Read project is to improve the reading ability of pre-primary to Grade 3 learners with a series of interventions that will be measured using the EGRA.

USAID Education Data established a baseline for Grade 2 learners' reading skills at the end of the 2018 academic year, prior to the start of the USAID Let's Read Project. To measure change against the baseline for learners' reading skills, a Midline EGRA of Grade 2 learners in the schools where the USAID Let's Read Project was implemented was conducted at the end of the 2021 academic year. The survey had two components: the EGRA and Snapshot of School Management Effectiveness (SSME). SSME is a tool that is used to assess educational quality within a school, district, or country. It is designed to produce information on the quality of management factors by extracting the maximum amount of information from a school within a day. It includes a teacher, learner, and headteacher questionnaire and an observation tool, known as a school inventory.

Before USAID Let's Read Project could complete two years of implementation in schools, the COVID-19 pandemic hit. In Zambia, it forced the closure of primary schools from March 2020 until September 2020. COVID-19 hampered the teaching and learning of reading between the baseline and Midline EGRAs. COVID-19 also affected the USAID Education Data Activity's evaluation by delaying the Midline EGRA an entire year, from 2020 to 2021. In short, COVID-19 has had widespread implications across the Zambian education system as evidenced by research studies by various cooperating partners and the



MoE.<sup>1</sup> This report centers on the Midline EGRA conducted in the five provinces where USAID Let's Read Project operates— Eastern, Muchinga, North-Western, Southern, and Western province—to measure the project's progress. It forms the basis of a comparison on learner outcomes in Zambian schools between 2018 and 2021. DevTech Systems, Inc. operating as USAID Education Data Activity conducted this Midline EGRA with its sub-contractors Management Systems International (MSI), the University of Zambia, Institute for Economic and Social Research, and ECZ.

Alongside the Midline EGRA, the project also conducted the National Estimates Research Study (NERS), a geographical extension of the EGRA assessment to five other provinces where the USAID Let's Read Project is not operational, namely, Copperbelt, Central, Luapula, Lusaka and Northern province. The project extended the EGRA to these five provinces in response to the government's request to measure progress on national reading levels among a representative sample of Grade 2 learners in all ten provinces.

This report is organized as follows: the Introduction provides a description and justification of the activity, and the objectives of the Midline EGRA and the associated research questions it seeks to answer; the Methodology section provides a description of the approaches used to undertake the study, including the study design, the sampling of schools, the training for data collection and data collection processes, and the measures to support analyses; the Results section provides responses to the research questions and highlights key findings delineated into sub-questions for detailed analysis as per the EGRA tool design; the Discussion section interprets results considering the local and global context for education policy and practice; and finally the Conclusions and Recommendations section summarizes the responses to each research question and provides recommendations for education policy in Zambia.

## **I.1. MIDLINE EGRA OBJECTIVES**

The timing of this Midline EGRA was two years into implementation of the USAID Let's Read activity. USAID Education Data carried out this Midline EGRA at the end of the 2021 academic year, collecting data in schools from October to December 2021. The objective of this Midline EGRA was to measure change in learner's reading skills in the USAID Let's Read Project targeted schools in the five target provinces against the baseline conducted in 2018.

The goal of this Midline EGRA was to support the sustained and timely generation of EGRA data in Zambia. To this end, this Midline EGRA was organized and executed to sustainably build the institutional and human capacity of ECZ to independently conduct national EGRAs and provide timely information about student reading competencies.

## **I.2. RESEARCH QUESTIONS**

The Midline EGRA sets out to answer the following questions:

- I. What is the change in Grade 2 learners reading performance from baseline to midline?

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<sup>1</sup> Saavedra J. 2021. *A Silent and Unequal Education Crisis and the Seeds for its Solution*. (worldbank.org)

UNESCO Institute for Statistics, UNICEF & World Bank. (2020a). Survey on National Education. Responses to COVID-19 School Closures, round 2. <https://infogram.com/da3bcab3-ff85-4f6a-8d9a-e6040c7fd83d>

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ZANEC. 2021. *Continuity of Learning Survey report. 2021*

2. To what extent does gender or school type affect reading performance?
3. What are the midline reading proficiencies in the Lols relative to the MoE national benchmarks and USAID Let's Read Project targets?
4. What are the significant predictors of oral reading fluency (ORF)?

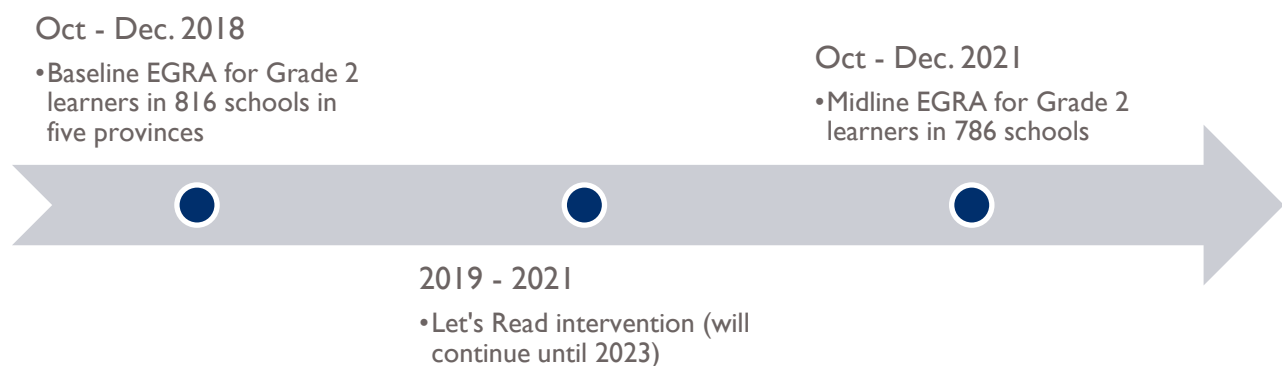
## II. METHODOLOGY

This section discusses the midline assessment's preparation, data analysis methods, and study limitations. Annex 7 includes a complete set of the EGRA tools in seven local languages as well as the SSME tools. Annex 5 includes additional information on the methodology used for conducting the Midline EGRA.

### 2.1. RESEARCH DESIGN

This quantitative study uses a one-group pretest posttest design that compares baseline and midline reading scores for Grade 2 learners from different cohorts (2018 and 2021) using the same sample of schools participating in the USAID Let's Read Project intervention in the seven Lols—Chitonga, Cinyanja, Icibemba, Kiikaonde, Lunda, Luvale, and Silozi—across five provinces of Zambia. No comparison group was used for this study. Figure 1 summarizes the research design.

FIGURE 1: EGRA ASSESSMENT RESEARCH DESIGN



The assessment team collected quantitative baseline data from October to December 2018. In addition to reading scores, the team collected, for both baseline and midline, data on learners' individual and family characteristics, and school and teacher characteristics. USAID Let's Read Project intervention in the sample schools began in 2019 and continued until 2023 covering five cohorts of Grade 2 learners: 2019, 2020, 2021, 2022 and 2023. The original midline scheduled for October 2020 was deferred due to the COVID-19 pandemic and school closures. Primary schools in Zambia closed from March 20 to September 14, 2020. Consequently, the midline data collection occurred from October to December 2021, sampling the 2021 Grade 2 cohort. The unit of analysis for the Midline EGRA is the school.

### 2.2. SAMPLE METHODOLOGY

The Midline EGRA collected data from the same schools that were assessed at baseline in 2018. At baseline, the USAID Education Data Activity used a three-step process for sample selection:

1. Language mapping to create a sample frame of 4,626 schools in five provinces and seven Lols of Chitonga, Cinyanja, Icibemba, Kiikaonde, Lunda, Luvale, and Silozi.
2. Selection of 816 schools using a stratified random sample selection. Schools were selected for each Lol. For each Lol, schools were allocated equally by district. Within each district of each Lol, schools were allocated proportionally by urban and rural locations. Within each urban and

rural location, schools were allocated proportionally by school type (GRZ school or community school) and Early Childhood Education (ECE) status (i.e., ECE or no-ECE).<sup>2</sup>

3. Selection of 20 learners in Grade 2 per school using systematic random sample selection with equal allocation of boys and girls. Ten boys and 10 girls were selected in the classrooms. To do this, the Quality Control Officer (QCO) counted how many boys and how many girls attended the day of the assessment and each one was assigned a number (for example, if 20 boys attended, each one was represented by a number between 1 to 20). Using an app on a tablet, the number of boys and girls in attendance was entered, and 10 random numbers were generated for boys, and another 10 random numbers for girls. The test was applied to children selected by random assignment.

Table 1 shows that 15,079 learners from 816 schools completed the assessment in 2018 and 14,949 learners from 716 schools completed the assessment in 2021. The assessment team also collected information from teachers, headteachers, and a school inventory as part of the SSME tools further described in Section 2.3. Teachers were selected based on the random selection of the Grade 2 class at school-level. Each Grade 2 class had one class teacher. A total of 801 teachers participated in the baseline assessment and 777 in the midline assessment. At midline, not all teachers were in school when collecting the data on the day of the assessment, thus, the number of teachers is slightly lower than the number of schools assessed.

TABLE 1: BASELINE AND MIDLINE EGRA SAMPLE SUMMARY

	Baseline 2018	Midline 2021
<b>Grade 2 Learners</b>	15,079	14,949
<b>Grade 2 Teachers</b>	801	777
<b>Head Teachers</b>	816	776
<b>Schools</b>	816	786

Of the 816 schools originally assessed in 2018, 30 schools at midline were lost due to the following reasons: closure of schools, change in Lol used to assess the schools at baseline, inaccessibility due to heavy rains.<sup>3</sup> This attrition affected schools with Icibemba, Kiikaonde, Lunda, Luvale and Silozi Lols; however, it is most pertinent for Lunda (79 schools) and Luvale (71 schools) as the school samples have fallen below 80, which undermines the generalizability of the estimates for both languages.

TABLE 2: SCHOOLS IN MIDLINE SAMPLE

Province	Language	Total	School Type				Location	
			GRZ + No ECE	GRZ + ECE	COM + No ECE	COM + ECE	Urban	Rural
Southern	Chitonga	156	25	77	25	29	48	108
Eastern	Cinyanja	134	38	71	19	6	8	126
Muchinga	Icibemba	102	58	20	24	0	2	100
North-Western	Kiikaonde	82	47	25	9	1	16	66

<sup>2</sup> ECE centers are pre-primary centers in Zambia that focus on learners ages three to four (nursery level) and five to six (reception level). ECE centers are located in government primary schools.

<sup>3</sup> Attrition and school representation within provinces is further discussed in Annex 4.

Province	Language	Total	School Type				Location	
			GRZ + No ECE	GRZ + ECE	COM + No ECE	COM + ECE	Urban	Rural
North-Western	Lunda	79	46	17	16	0	1	78
North-Western	Luvale	71	34	21	15	1	1	70
Western	Silosi	162	81	48	25	8	14	148
Total		<b>786</b>	<b>329</b>	<b>279</b>	<b>133</b>	<b>45</b>	<b>90</b>	<b>696</b>

The assessment team conducted statistical analysis and reviewed how the average scores at baseline were affected by the sample attrition, available in Annex 4. In summary, baseline average scores for the 30 schools that did not participate at midline are, on average, slightly lower than the 786 schools that participated at midline. Differences, although low, are statistically significant at the one percent level for the average score for Ibibemba, Kiikaonde, Silosi, Luvale and Lunda. Given that the 30 schools that did not participate at midline are skewing the baseline sample towards lower results, our counterfactual if they were included in the midline would be that learners from these schools would not be contributing to improved results. As a result, we can confidently use the baseline EGRA average scores as a point of comparison to the midline results. If the project had included these schools at midline, the results could potentially have been lower than the actual Midline EGRA results.

## 2.3. DATA COLLECTION INSTRUMENTS

This study employs EGRA and SSME instruments to collect data to answer its research questions. The following table summarizes how each tool is linked to the research questions.

TABLE 3: RESEARCH QUESTIONS AND INSTRUMENTS

Research Question	Instrument
1. What is the change in Grade 2 learners reading performance from baseline to midline?	EGRA in seven Lols: listening comprehension, letter sounds, syllable sounds, non-word reading, oral reading, reading comprehension, English vocabulary, and English listening comprehension
2. To what extent does gender and school type affect reading performance?	
3. What are the midline reading proficiencies in Lols relative to the MoE national benchmarks and USAID Let's Read Project targets?	
4. What are the significant predictors of ORF?	SSME (learner, teacher, head teacher, and school inventory) combined with ORF scores from EGRA

While the EGRA provides data on reading scores, the SSME tools provide data on individual, teacher, and school characteristics. These tools are further described in the next section.

### 2.3.1. READING ASSESSMENT INSTRUMENT

To determine how reading performance, performance by gender and school type, and reading proficiency changed over time for learners in schools targeted by the USAID Let's Read Project, the study assessed Grade 2 learners using EGRA subtasks for seven Lols. The subtasks are listening comprehension, letter sound identification, syllable sound identification, non-word reading, oral reading fluency, reading comprehension, English vocabulary, and English listening comprehension.

TABLE 4: EGRA SPECIFICATIONS FOR GRADE 2

Subtask	Reading Skill	Number of Items
Listening comprehension	Oral language comprehension	5 questions
Letter sound identification	Alphabetic principle <sup>4</sup>	100 letter sounds
Syllable sound identification	Alphabetic principle	100 syllables
Non-word reading	Decoding (sub-lexical)	50 non-words
Oral reading	Fluency	56 words in Chitonga, 48 words in Cinyanja, 43 words in Ibibemba, 50 words in Kiikaonde, 43 words in Lunda, 49 words in Luvala, and 57 words in Silozi
Reading comprehension	Reading comprehension	5 questions
English vocabulary	Vocabulary	20 questions
English listening comprehension	Oral language comprehension	5 questions

The EGRA tools for the seven different Lols used at midline are the same instruments that were used at baseline. Development of grade-appropriate and context-specific EGRA tools involved extensive research, drafting, adaptation, and pilot testing. USAID Education Data Activity worked closely with curriculum, reading, and language specialists from ECZ to review and adapt the EGRA tools. Furthermore, MoE, ECZ, and USAID participated in a validation workshop to finalize the tools in October 2018. A description of the adaptation, piloting, and validation process is further described in Annex 5.

### 2.3.2. SCHOOL MANAGEMENT EFFECTIVENESS QUESTIONNAIRE

To address significant predictors of ORF, the assessment team collected data using questionnaires from the SSME tool created specifically for learners, teachers, and head teachers. Furthermore, enumerators obtained data on the schools' infrastructure to fill out a school inventory checklist. USAID Education Data Activity worked with USAID Let's Read Project and ECZ to update the SSME tools used at baseline to include questions related to COVID-19. Furthermore, USAID Education Data Activity worked with the Curriculum Development Centre (CDC) Language Specialists to validate the translations of the learner questionnaire in the seven Lols. The CDC also translated the newly added COVID-19 questions to the SSME tools.

TABLE 5: DESCRIPTIONS OF TOPICS IN SSME QUESTIONNAIRES

Questionnaire	Major Topics
Head Teacher	Head teacher information, school's records, resources, and literacy projects, parental and community involvement, professional development and training, coaching, ECE, and COVID-19 effects and adaptations
Learner	Learner information, access to reading materials at school, reading habits at school, instructional methods for reading used by teacher, conditions at home, reading habits at home, and COVID-19 effects
School Inventory	School information, school infrastructure, and COVID-19 safety measures
Teacher	Teacher information, professional development and training, coaching, reading lessons, learner assessment, and COVID-19 effects and adaptations

The measures of individual learner characteristics (gender, district, read books on your own, attended Pre-K); family and home characteristics (schools lessons at home during school closure, learner reads

<sup>4</sup> Alphabetic principle is the ability to recognize letters and their corresponding sounds.



out loud at home, other reading materials at home); and school and teacher characteristics (teacher's comfort in Lol, teacher supported remote learning, teacher can access resources from USAID Let's Read Project) are derived from the learner and teacher questionnaires and will be used to address the fourth research question about the predictors of ORF.

All the instruments used for the EGRA midline study were approved by the Ethical Review Committee for an Institutional Review Board at MSI in September 2018 and additional ethical clearance was received in Zambia in 2021. The final versions of the EGRA and SSME tools were programmed into the Myna application and uploaded onto electronic tablets.

## 2.4. MEASURES

This section provides a detailed description of the measures used in the study including definitions and variables for predictors of oral reading skills, participation in the baseline and midline studies, and learner, teacher, and school characteristics. The primary outcome of interest is ORF as reflected by scores on the EGRA. The unit of analysis is the individual learner. Additional information about each measure is available in Annex 5.

### 2.4.1. PREDICTORS OF ORAL READING SKILLS

Grade 2 learners were directly assessed to measure cognitive domains in early reading at the end of Grade 2 in 2018 during the first year of the USAID Let's Read Project intervention, and in 2021 after three years of the project implementation. As discussed, the assessment used the same EGRA tool that was previously used by USAID Education Data Activity at baseline. The tool includes the following subtasks: listening comprehension, letter sound identification, syllable sound identification, non-word reading, oral reading fluency, reading comprehension, English vocabulary, and English listening comprehension. Table 6 summarizes how these tasks are related to reading skills. Furthermore, additional information on how each task is administered is also available in Annex 5.

TABLE 6: EGRA TOOL TASKS

EGRA Tool Task	Task Description
Listening Comprehension	Measures oral language comprehension in the Lol and indirectly measures oral vocabulary
Letter Sound Identification	Assesses alphabetic principle: the ability to recognize letters and their corresponding sounds
Syllable Sound Identification	Assesses alphabetic principle. Used for languages with mainly open syllables or when reading instruction stresses combinations of syllables
Non-Word Reading	Measures decoding by requiring the learner to apply the phonemes from their language to non-words.
Reading Fluency	Evaluates the ability of the learner to read a grade-level text with speed, accuracy, and expression.
Reading Comprehension	Measures reading comprehension using explicit and implicit comprehension questions based on the oral reading passage
English Vocabulary	Measures English vocabulary in terms of individual words for body parts, objects, and spatial relationships

## 2.4.2. USAID LET'S READ PROJECT INTERVENTION

**TIME VARIABLE.** Participation in a school receiving the USAID Let's Read Project intervention at baseline and at midline is the independent variable of interest. It is measured using a binary time variable: zero for the baseline and one for the midline. The variable captures the change in time between the baseline in November 2018 and the midline in November 2021. Subsequent to the baseline, the USAID Let's Read Project implemented its early grade reading intervention in the schools included in the sample. Therefore, the coefficient of the variable will capture the change between 2018 and 2021. Nonetheless, any change is not fully attributable to the USAID Let's Read Project as the study design lacks a comparison group.

## 2.4.3. LEARNER, TEACHER, AND SCHOOL CHARACTERISTICS

We used inferential analysis with variables from the learner questionnaire and teacher questionnaire that predict learners' midline scores on ORF. These variables include:

- **Student characteristics:** gender information, if the student had breakfast at home, if they read books on their own at school, or if they read to someone at home, if there are materials at home for them to read, if they learnt school lessons at home during COVID, etc. Additionally, we constructed a socioeconomic index that takes into account several student-level characteristics: having electricity at home, having access to a computer, radio, TV; the quality of water, bathroom type, among others,
- **Teacher characteristics:** Teacher's level of comfort in the Lol, teacher has access to resources provided by USAID Let's Read Project, teacher provided support during remote learning.
- **School characteristics:** Language of instruction, if it's a government run school or community school, if the school has ECE, or if the school has a feeding program.

A detailed description of each variable tested is available in Annex 5.

## 2.5. TRAINING OF QCOS AND ASSESSORS

To prepare for the Trainer of Trainers (ToTs), QCO and assessor trainings, USAID Education Data Activity worked closely with the sub-contractor, the Institute of Economic and Social Research (INESOR), to shortlist 385 candidates to participate in the trainings. The assessment team received support to conduct the trainings from the EGRA Master Trainer that conducted the trainings for the EGRA baseline and a team from ECZ. Due to the COVID-19 pandemic, a hybrid model was used to conduct the trainings. The EGRA Master Trainer facilitated the trainings virtually, while the participants physically convened observing the COVID-19 protocols outlined by the Ministry of Health.

The project conducted the ToT training in Lusaka from October 6 to October 8, 2021. Twenty-one ToTs across the seven Lols were trained (9 females and 12 males). These ToTs provided support for the subsequent QCO and EGRA trainings. The ToT training was followed by the QCO training conducted from October 11 to October 15, 2021 in Lusaka. During this training, 96 QCOs were trained and 82 (30 females and 52 males) were retained for data collection.

Unlike the ToT and QCO trainings that were conducted in Lusaka, the project decentralized the assessor trainings to five provincial capitals: Mongu, Choma, Chipata, Solwezi and Kasama simultaneously from October 19 to October 22, 2021. The two main advantages of conducting the assessor trainings

across these five locations were: 1) the trainings were conducted in the languages of instruction that assessors used to conduct the EGRA assessments (training in Mongu was provided in Silozi; training in Choma was provided in Chitonga; training in Chipata was provided in Cinyanja; trainings in Solwezi were provided in Lunda, Luvala, Kiikaonde; and training in Kasama was provided in Ibibemba) and; 2) the number of trainers in each location was reduced, minimizing the risk of transmission of COVID-19. The project trained a total of 267 assessors and retained 246 of them (127 females and 119 males) across the five locations. Approximately 77 percent of individuals trained across the ToT, QCO, and assessor trainings were MoE officials.

To select the best individuals per language group for the three trainings (ToT, QCO, and assessor) to participate in the Midline EGRA data collection, the project used the Inter-Rater Reliability (IRR) scores from the two gold standard assessments conducted for each of the trainings. All the participants selected attained the 90 percent international EGRA gold standard and above. In addition to attaining the gold standard, the following criteria was also considered:

1. Level of competency in administering the EGRA (based on how well each trainee administered the EGRA during practice sessions).
2. Level of comfort with the tablet (based on how well the trainees navigated the tablet during practice sessions).
3. Ability to be a team player (based on how well the individual worked with and supported team members).
4. Proficiency in reading and speaking the language of assessment depending on the province.
5. Attendance (how many days the participants attended the training).
6. Participation during the trainings.

A summary of the number of participants selected after each training is included in Table 7.

TABLE 7: FINAL LIST OF TOTS, QCO AND ASSESSORS SELECTED AFTER THREE TRAININGS ACROSS THE SEVEN LOIS ACROSS THE TEN PROVINCES

Loi	ToTs			QCO			Assessors		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Ibibemba	2	1	3	7	4	11	12	21	33
Chitonga	1	2	3	10	4	14	22	20	42
Cinyanja	2	1	3	10	7	17	24	27	51
Silozi	0	3	3	12	4	16	21	27	48
Kiikaonde	3	0	3	4	5	9	14	13	27
Lunda	2	1	3	3	5	8	13	11	24
Luvala	2	1	3	6	1	7	13	8	21
<b>Total</b>	<b>12</b>	<b>9</b>	<b>21</b>	<b>52</b>	<b>30</b>	<b>82</b>	<b>119</b>	<b>127</b>	<b>246</b>
		<b>21</b>			<b>82</b>			<b>246</b>	

## 2.6. DATA COLLECTION AND DATA QUALITY ASSURANCE

Data collection took place toward the end of the 2021 school year, from late October to the first week of December, for approximately five weeks. This enabled the measuring of early grade reading skills based on knowledge gained by Grade 2 learners in a full academic year. The data collection period is consistent with that of the baseline in 2018. Thus, results should be directly comparable. The 82 well-trained data collection teams collected data from 786 Midline EGRA schools and 482 NERS schools, for an average of 11 to 16 schools per team.

To ensure reliability and consistency in scoring among all the assessors, the USAID Education Data Activity conducted IRR tests during data collection. At each school, two assessors assessed two (or three) learners independently at the same time. Results were analyzed using Cohen's kappa ( $\kappa$ ) coefficient to measure the IRR or the degree of similarity in their ratings and found near-perfect agreement between the assessors was achieved for all languages, indicating very high data reliability. Additional information about data quality assurance methods is included in Annex 5.

Results show that there was **near-perfect agreement** between assessors, with a Cohen's Kappa coefficient **above 0.92** for all languages, indicating **very high data reliability**.

## 2.7. LIMITATIONS

The major limitations of the research strategy are sample attrition in the Lunda and Luvale school samples, inability to compare results between Lols, inability to calculate generalizable results at a level lower than Lol, such as a district, and response bias in the learner and teacher questionnaires.

**INTERNAL VALIDITY – DIFFERENTIAL ATTRITION.** The main threat to internal validity of the pre-test post-test design in this study is differential attrition. Due to the design of the study, the same schools were surveyed at baseline and midline to make a valid comparison for the USAID Let's Read Project. The minimum sample size for schools within each Lol is 80 schools. This means that sample attrition at the school-level in Lunda (82 schools at baseline and 79 schools at midline) and Luvale (88 schools at baseline and 71 schools at midline) compromised the school samples. The sample size at midline is less than 80 schools for these Lols, which undermines the generalizability of the estimates for Lunda and Luvale.

**COMPARABILITY OF LANGUAGES.** EGRAs administered in different languages generally use comparable test forms in that the EGRA forms themselves have the same measurement purpose, but there is no assumption of equivalence (i.e., identical item difficulty).<sup>5</sup> Zambian languages are transparent, but they have different levels of orthographic transparency.<sup>5</sup> Therefore, it is not easy to say when learners in language A are outperforming those in language B if language A has a far more transparent orthography than language B. Comparisons between languages at baseline or midline are not appropriate due to the inherent differences among languages, however, the differences will not affect comparison within a language over time (such as between baseline and midline for a given language). Thus, it's safe to compare language A at baseline with language A at midline, but language A should not be compared to language B at any moment.

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<sup>5</sup> In the field of lexical semantics, semantic transparency is a measure of the degree to which the meaning of a multimorphemic combination can be synchronically related to the meaning of its constituents. Semantic transparency is a scalar notion. At the top end of the scale are combinations whose meaning is fully transparent; combinations at the bottom end are said to be semantically opaque.

**EXTERNAL VALIDITY- GENERALIZABILITY OF RESULTS LOWER THAN LOI-LEVEL.** Due to the sample size, the results are only generalizable at the level of the Lol. The original sample of 816 schools is large enough that generalized overall conclusions can be drawn. However, since the sample was selected proportionately to the number of schools in each district and then by location and school type within each district, the number of sampled schools ranged from 7 to 43 in individual districts. Due to these differences in sample size at the district level, comparisons based on statistical analysis between the districts cannot be made. In some schools there were fewer than 15 learners enrolled in Grade 2, and all who were present on the day of assessment were included. In other schools, there were more than 100 Grade 2 learners, and 20 learners were assessed. Because the sample size at the school-level was not large enough in some schools relative to others, it is not possible to statistically compare school A to school B even when using weighted scores. Therefore, all lower levels of disaggregates within Lol including the province and district will not have generalizable results.

**STATISTICAL CONCLUSION VALIDITY - RESPONDENT BIAS.** Respondent bias is a common issue with in-person questionnaires. This bias includes several types of false or adjusted responses, where respondents react to stimuli other than the question itself, such as the environment, the presence of others nearby, etc. Among these is a bias that occurs when interviewees are inclined to choose their responses that they believe are more pleasing or acceptable to the interviewer. The risk of respondent bias was especially high for the learner questionnaire as Grade 2 learners were asked to provide household-level information such as household assets and consumer durables, access to utilities at home, whether parents help them with homework, and so on. It is difficult to measure the extent of this bias without utilizing costly follow-up procedures. Fortunately, there is no reason to suspect that any response biases would not be uniform across respondents, so data should remain valid even if bias was detected. The study took several precautions to reduce such biases by carefully training assessors on appropriate reactions to learner correct and incorrect answers and general attitudes when interviewing respondents.

Lastly, although not a limitation, the reader should keep in mind that this is not an impact evaluation; the research design did not consider a comparison group. The schools and learners in the study all received the intervention from the USAID Let's Read Project. The study design is strong enough to measure the change between baseline and midline for learners' performance in reading skills. However, any change cannot be attributed to the USAID Let's Read Project because the study lacks a valid comparison group that did not receive the USAID Let's Read Project's intervention.

### 2.7.1. COVID-19 CONTEXT

Before the USAID Let's Read Project could complete two years of implementation in schools, the COVID-19 pandemic hit. As USAID recognized in its own guidance, the pandemic is a factor that could affect the timing, implementation, outcomes, sample, and interventions studied by evaluations of education activities. In Zambia, it forced the closure of primary schools from March 2020 until September 2020. Learners lost seven months of in-person instruction for the 2020 academic year. Anecdotal evidence and data collected suggests that learners largely did not engage with their studies during the closure. It is likely that COVID-19 hampered the teaching and learning of reading between baseline and midline. In addition to affecting the implementation of Let's Read, COVID-19 also affected USAID Education Data activities by delaying the midline an entire year from 2020 to 2021. In short, COVID-19 represents an external shock on the education system in Zambia.

### III. RESULTS

In this section, we start by presenting overall characteristics of the EGRA sample before providing EGRA midline results by each subtask, including the percentage of learners scoring zero, average learner scores, and the percentage of learners achieving the USAID Let's Read Project targets, disaggregated by learner sex and school type. We also compare midline results with baseline data to assess changes in reading performance between 2018 and 2021 and we discuss when the differences between the categories are statistically significant. Annex I presents disaggregated results by language, gender, and school type.

There was no significant change in the distribution of students by key characteristics between baseline and midline. Indeed, as shown in Figures 2 and 3, percentage differences between baseline and midline varied from 0.1 up to 0.8 percent. At midline 49.2 percent of learners were boys and 50.8 percent girls. The participation of students according to the language of application of EGRA, corresponded to 19.9 percent in Chitonga, 19.6 percent in Cinyanja, 10.7 percent in Icibemba, 10.7 percent in Kiikaonde, 9.9 percent in Lunda, 8.3 percent in Luvale, and 20.8 percent in Silozi. Additionally, 78.4 percent of the students assessed at midline were attending GRZ schools, while 21.6 percent were from community schools. The distribution by province was 17.7 percent of students from Eastern, 12.6 percent from Muchinga, 28.9 percent from North-Western, 19.9 percent from Southern, and 20.8 percent from Western. Lastly, 88.2 percent of students came from rural areas, and only 11.8 percent came from urban areas.

FIGURE 3: SAMPLE DISTRIBUTION BY GENDER

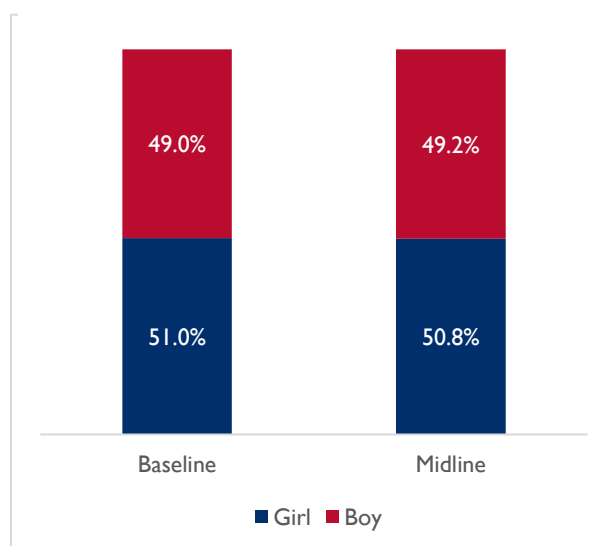
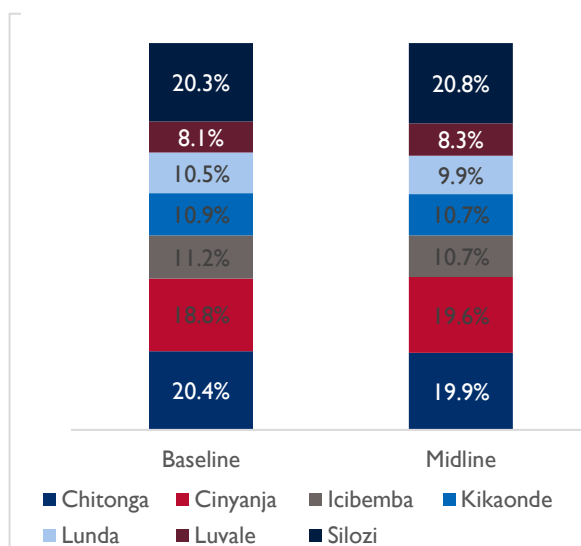


FIGURE 2: SAMPLE DISTRIBUTION BY LANGUAGE OF INSTRUCTION



This results section is structured based on the Midline EGRA research questions. The first question seeks to analyze the changes in Grade 2 learners' reading performance between baseline and midline. The second question seeks to analyze the differences by sex and by type of school. The third question aims to show how the results compare to the MoE benchmarks of non-readers, minimum level readers, and fluent readers. Lastly, Research Question 4 seeks to analyze which are the significant predictors of ORF using statistical regression methods.



### 3.1. RQ 1: WHAT IS THE CHANGE IN GRADE 2 LEARNERS READING PERFORMANCE FROM BASELINE TO MIDLINE?

To respond to this question, we analyze results of pre-reading skills (listening comprehension), initial reading skills (letter sound, syllable sound, and non-word decoding), and fluency confirmation skills (oral reading fluency and reading comprehension). For all skills, we compare zero scores and average performance by language.<sup>6</sup> Lastly, we present the results from inferential analysis using Ordinary Least Squares (OLS) regression to compare baseline and midline results for each subtask by Lol relying on the sub-task scores as dependent variables, and time as the independent variable.<sup>7</sup>

#### 3.1.1. PRE-READING SKILL: LISTENING COMPREHENSION

This subtask directly measures oral language comprehension in the Lol and indirectly measures oral vocabulary (RTI International, 2016). In the administration of this test, the assessor reads aloud a short passage, and the learner has the opportunity to answer five comprehension questions about the story. The answers are scored as correct, incorrect, or no response. The total score is the value of correct responses ranging between zero and five. Listening comprehension is not timed, and scores are not adjusted for time.

##### 3.1.1.1. ZERO SCORES IN LISTENING COMPREHENSION

Overall, there was a non-statistically significant small reduction in the percentage of students with zero scores at midline when compared to baseline. As shown in Table 8, 17.6 percent of the midline learners scored zero in listening comprehension, compared to 17.9 percent of the baseline learners, which represents a reduction of 0.3 percentage points. This indicates that for both the midline and baseline, nearly one in six learners did not understand at all what was read to them.

Results vary depending on the language, but differences are also not statistically significant. Learners assessed in Kiikaonde, Lunda, and Silozi saw an increase in the percentage of learners with zero scores by 2.9 percent, 0.2 percent, and 5.2 percent, respectively. In the case of Silozi, this increase means that learners in this language went from approximately one in five students with zero scores at baseline, to approximately one in four students at midline. Additionally, at 22.3 percent, the percentage of learners scoring zero in Cinyanja at midline was also high, though this figure represented a 3-percentage point improvement from the baseline zero score. Approximately 54 percent of learners assessed in Silozi that had zero scores in this task reported that they most frequently speak another language at home. For Cinyanja, this figure was 44 percent.

#### Main Takeaways – RQ 1

At midline, there is an **overall decrease in Grade 2 learners' reading performance**:

- There is an **increase in the percentage of learners that score zero** (learners that cannot start an EGRA task) in letter sound identification, syllable sound identification, non-word reading, oral reading fluency, and reading comprehension. Listening comprehension zero scores in the Lols and in English are slightly lower at midline.
- This has significantly affected higher level reading skills such as reading fluency and comprehension. **The average score for oral reading fluency decreased 29 percent**, from 5.9 correct words per minute (cwpm) at baseline to 4.2 cwpm at midline. **The average reading comprehension score decreased by 24 percent**, from 10.6 percent to 8.1 percent.

<sup>6</sup> Zero scores represent the percentage of learners who scored zero, that is, did not answer a single question correctly.

<sup>7</sup> More information is available in Annex 5.

TABLE 8: LISTENING COMPREHENSION ZERO SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE

Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	17.9%	8.9%	25.3%	13.5%	11.3%	9.9%	8.0%	18.0%
Midline	17.6%	7.2%	22.3%	11.8%	14.2%	10.1%	6.7%	23.2%
Difference	-0.3% pts.	-1.7% pts.	-3.0% pts.	-1.7% pts.	2.9% pts.	0.2% pts.	-1.3% pts.	5.2% pts.
Significance	None	None	None	None	None	None	None	None

Note: Difference= midline – baseline scores

### 3.1.1.2. AVERAGE SCORES IN LISTENING COMPREHENSION

Overall, at midline, learners were able to answer on average 41.6 percent of questions correctly (equivalent to two comprehension questions). This is a small increase of 0.6 percentage points over baseline, and the difference, although small, is statistically significant. Results presented by language in Table 9 show that, on average, learners in Kiikaonde continued to perform best and were able to answer 51.6 percent of questions correctly (equivalent to 2.5 questions). However, this is a statistically significant reduction in listening comprehension performance of 6.6 percentage points from the baseline performance of 58.2 percent. Learners in Silozi also experienced a similar decrease in listening comprehension performance, going from 42.3 percent at baseline to 37.8 percent at midline. Learners in Cinyanja and Silozi scored the lowest in listening comprehension. This is unsurprising given that both languages present the highest percentage of learners with zero scores at midline.

TABLE 9: LISTENING COMPREHENSION AVERAGE SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE<sup>8</sup>

Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	41.0	47.2	34.5	40.3	58.2	47.1	44.9	42.3
Midline	41.6	50.7	37.5	41.8	51.6	50.4	46.2	37.8
Difference	0.6	3.5	3.0	1.5	-6.6	3.3	1.3	-4.5
Significance	***	**	None	None	**	None	None	None

### 3.1.2. INITIAL READING SKILLS: LETTER SOUNDS, SYLLABLE SOUNDS, NON-WORD READING

As reported in the Baseline EGRA Report, in Zambia, beginning in Grade 1, learners are taught that letters represent individual sounds that when combined with other letters make up words, and that these words map onto different meanings. For example, as learners learn to blend the individual “c”, “a”, and “t” sounds together to form the word “cat,” they utilize their vocabulary skills to connect the word with the animal they know. As learners progress and practice manipulating different sound and syllable combinations, they begin to decode and then recognize simple words (Kim et al. 2016). Learners who are second language learners require additional instructional support to help map meaning onto the words they read. This is because they lack the requisite oral language and vocabulary skills in the LoI (Kim et al. 2016). To assess learners’ mastery of these initial reading skills, the Baseline and Midline EGRAs include a letter sound identification, a syllable identification, and a non-word reading subtask. In

<sup>8</sup> Throughout this report, we use \*\*\*, \*\*, and \* to represent significance at 1%, 5%, and 10% levels, respectively.

the next section we describe the results of each measure, including both zero scores and average scores for baseline and midline EGRA results.

### 3.1.2.1. ZERO SCORES IN LETTER SOUND, SYLLABLE IDENTIFICATION, AND NON-WORD READING

Table 10 shows baseline and midline zero score results by language for three subtasks: letter sound, syllable identification, and non-word reading. Additionally, the table shows if the differences between baseline and midline zero scores are statistically significant. Overall, for the initial reading subtasks, small increases at midline in zero scores in letter sound identification (1 percentage point compared to baseline) translated into higher increases in syllable sound identification (3 percentage points) and non-word reading (4.6 percentage points) zero scores.

TABLE 10: LETTER SOUNDS, SYLLABLE IDENTIFICATION, NON-WORDS ZERO SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE

Letter Sounds Zero Scores								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	38.4%	47.1%	37.9%	30.8%	11.3%	41.2%	41.3%	29.7%
Midline	39.4%	32.7%	45.7%	26.3%	14.2%	41.3%	39.1%	32.3%
Difference	1.0%	-14.4%	7.8%	-4.5%	2.9%	0.2%	-2.3%	2.6%
Significance	***	***	None	None	None	None	None	None
Syllable Sound Zero Scores								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	50.1%	55.0%	53.5%	49.0%	53.0%	60.0%	33.3%	36.4%
Midline	53.0%	52.7%	55.6%	40.3%	57.2%	63.6%	45.6%	48.7%
Difference	3.0%	-2.3%	2.1%	-8.7%	4.3%	3.6%	12.3%	12.4%
Significance	***	None	None	None	None	None	***	***
Non-Words Zero Scores								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	65.7%	67.7%	69.9%	60.9%	71.1%	64.0%	59.3%	55.8%
Midline	70.3%	67.9%	72.8%	58.0%	77.0%	67.3%	77.5%	68.3%
Difference	4.6%	0.1%	3.0%	-3.0%	5.9%	3.3%	18.2%	12.5%
Significance	***	None	None	None	None	None	***	***

**LETTER SOUND IDENTIFICATION.** Overall, 39.4 percent of learners could not identify a single letter sound correctly out of the possible 100 letters presented to them in the EGRA tool at midline. This represents an increase of one percentage point in zero scores compared to the baseline results, which is statistically significant. Results vary significantly by language. Zero scores are as high as 45.7 percent among learners in Cinyanja, which is an increase of 7.8 percentage points from baseline results. Kiikaonde is the language with the lowest percentage of students with zero scores (14.2 percent of students), however, this figure is almost 3 percentage points higher than the baseline zero score. As shown in Table 10, zero score differences between baseline and midline are only statistically significant for Chitonga, for which there is a significant reduction in learners with zero scores, going from almost 47 percent at baseline, to 32.7 percent at midline. Given the decrease in learners with zero scores, it is expected that students perform better at midline in this subtask compared to baseline.

**SYLLABLE IDENTIFICATION.** Overall, 53 percent of learners scored zero on the syllable identification subtask at midline, which is a statistically significant increase of 3 percentage points from the baseline results. This means that 5 out of 10 learners could not correctly identify a single syllable out of the 100 possible syllables in the tool. Zero scores ranged from 40.3 percent of learners in Ibibemba, to 63.6 percent of learners in Lunda. Consistent with baseline results, Lunda remains the language with the highest percentage of zero scores in this subtask. At midline, differences are statistically significant only for Luvale and Silozi, with increases of 12.3 and 12.4 percentage points in zero scores, respectively. Luvale and Ibibemba are among the languages with the lowest baseline and midline zero scores. As analyzed during the baseline report, according to the National Literacy Framework (MoE 2013), to be able to read, individuals must learn a total of 52 letter sounds in Luvale and Ibibemba. In contrast, other languages have more letter sounds, ranging from 62 to 72. This gives Luvale and Ibibemba learners more time to practice their syllable identification skills as compared to other languages that need more time to introduce new letter sounds. This may help to explain why these two languages have a lower percentage of students with zero scores for this subtask.

**NON-WORD READING.** Overall, 70.3 percent of all learners scored zero on the non-word reading subtask, meaning that the majority of learners (7 out of 10) could not decode a single non-word of the 50 that were presented to them. This is a statistically significant increase of 4.6 percentage points from the baseline results. As expected, the high percentage of zero scores in the previous subtasks translates to an even higher percentage of learners with underdeveloped decoding skills. By language, differences were statistically significant for the increase of learners with zero scores for Luvale and Silozi, with 18.2 and 12.5 percentage points increases, respectively, when compared to baseline results.

### 3.1.2.2. AVERAGE SCORES IN LETTER SOUND, SYLLABLE IDENTIFICATION, AND NON-WORD READING

Table 11 presents average baseline and midline score results by language for three subtasks: letter sound, syllable identification, and non-word reading. Additionally, the table shows if the differences between average baseline and midline scores are statistically significant. As expected, the increase in students with zero scores translates into a reduction in average scores for most languages in the three initial reading subtasks analyzed.

TABLE 11: LETTER SOUNDS, SYLLABLE IDENTIFICATION, NON-WORDS AVERAGE SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE

Letter Sounds Average Score								
Items	All	Chitonga	Cinyanja	Ibibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	6.9	6.4	6.7	8.1	6.1	5.6	5.1	7.5
Midline	6.6	7.5	6.3	8.7	5.4	6.2	4.7	6.0
Difference	-0.3	1.1	-0.4	0.7	-0.7	0.6	-0.4	-1.6
Significance	***	None	None	None	None	None	None	*
Syllable Identification Average Score								
Items	All	Chitonga	Cinyanja	Ibibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	10.3	8.7	10.1	9.6	8.5	7.4	14.2	14.0
Midline	8.1	7.8	8.4	8.9	5.6	5.7	6.9	8.6
Difference	-2.2	-0.9	-1.7	-0.7	-2.8	-1.7	-7.2	-5.4
Significance	***	None	None	None	**	None	***	***
Non-Words Average Score								

Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	4.4	3.9	3.8	6.4	2.9	4.7	5.2	5.4
Midline	3.9	3.3	2.9	5.8	1.9	3.8	2.4	3.2
Difference	-0.5	-0.5	-0.9	-0.6	-1.0	-0.8	-2.8	-2.2
Significance	***	None	None	None	**	None	***	***

**LETTER SOUND IDENTIFICATION.** Overall, at midline, there was a small reduction in the average number of letter sounds that learners were able to identify correctly in a minute as compared to baseline results. On average, learners were able to correctly identify 6.6 correct letter sounds per minute (clspm). This is a 0.3 clspm reduction from the baseline result, which, despite being a small reduction, is statistically significant. This indicates that learners continue to struggle to identify the correct sounds associated with each of the letters presented to them. As shown in Table 11, differences between baseline and midline results do not vary significantly, and only the 1.6 clspm decrease in Silozi is statistically significant. Matafwali and Bus (2013) note that most Zambian teachers learn to read letter names (the alphabet) as learners, so it is difficult for them to master letter sounds, and they fail to distinguish sounds in a local language, for example, “a” and “e”; “l” and “e”; and “k” and “c” (Matafwali and Bus 2013). Also, teachers are sometimes posted to areas where they do not speak the designated Lol and thus find it difficult to teach reading (Jere-Folotiya 2014). At midline, results from the teacher questionnaire show that 26 percent of teachers—one in four teachers—teach in a language that is not their mother tongue, and 30 percent of them—almost one in three—reported not being comfortable at all, or just somewhat comfortable in their language of instruction. At baseline, 27 percent of teachers were teaching in a language that is not their mother tongue, indicating that this trend hasn’t changed in the last three years. As a result, learners may not be taught the correct letter sounds if teachers do not receive explicit training to ensure that they themselves know the letter sounds.

**SYLLABLE IDENTIFICATION.** Overall, the average score at midline was 8.1 correct syllable sounds per minute (csspm), a statistically significant 2.2 reduction in csspm from the baseline result. By language, learners in Luvale, Silozi and Kiikaonde presented the highest performance reduction in this task, with statistically significant decreases of 7.2, 5.4 and 2.8 csspm, respectively. Learners in Luvale and Silozi were on average the highest scorers at baseline (40 percent above the average), but their performances at midline using the same EGRA tool declined significantly. They are now in line with averages from other languages. These results indicate that learners are recognizing and pronouncing a limited number of syllables, with greater gaps in performance than in the baseline study. Similar to baseline results, average scores in the syllable identification subtasks were higher than the average scores in the letter sound identification subtask. In addition to the fact that most teachers do not learn to read letter names and that some teachers are posted to areas where they do not speak the designated Lol, Zambian languages are syllabic in nature, and, as a result, learners find it easier to read syllables (combinations of one or more consonants and a vowel such as *ba*, *be*, *bi*, *bo*, *bu*) rather than individual letters such as *b*, *k*, and *c* on their own.

**NON-WORD READING.** On average, at midline, learners could read 3.9 correct non-words per minute (cnonwpm) of the 50 words that were presented to them. This represents a statistically significant reduction of 0.5 cnonwpm compared to the baseline result. This result is to be expected as a reduction in performance of basic skills like letter sound and syllable sound identification tends to impact learners’ ability to decode (the main literacy skill that this subtask measures). At midline, reductions are statistically significant for Kiikaonde, Luvale and Silozi, similar to the syllable identification sub-task.

### 3.1.3. FLUENCY CONFIRMATION: ORAL READING FLUENCY AND READING COMPREHENSION

The oral reading fluency subtask measures learners' ability to read a passage quickly and accurately. Learners are asked to read as much of a passage as they can within a minute. As discussed earlier in section 2.3, depending on the language, the passage contained between 43 and 57 words. After one minute, the assessor records the number of words read correctly.

The reading comprehension score reflects the percentage of questions answered correctly out of the total possible number of questions (five). After the learner reads the passage to assess oral reading fluency, the assessor asks the learner to answer comprehension questions about the story. The number of questions asked depends on the point at which the learner has stopped reading after one minute. If the learner has only read half of the passage, they are only asked two or three questions; if the learner has not read a single word, no questions are asked; and, if the learner has completed the passage within one minute, the assessor asks all five questions. The test is scored according to the number of correct questions answered (percent correct).

#### 3.1.3.1. ZERO SCORES IN ORAL READING FLUENCY AND READING COMPREHENSION

**READING FLUENCY.** As shown in Table 12, overall, at midline, about 69 percent of learners scored zero on the oral reading fluency subtask, which indicates that the majority of learners are non-readers, as they were not able to successfully start to read a small passage. This represents a statistically significant 4.8 percentage point increase in non-readers compared to the baseline result. When looking at languages individually, zero scores ranged from a high of 79.8 percent of learners in Kiikaonde to 61.1 percent of learners in Silozi. This trend is the same for baseline and midline results. As shown in Table 12, only the increases in zero scores for Luvale and Silozi are statistically significant.

This increase in learners with zero scores in oral reading fluency is expected given performances on the previous subtasks reviewed in section 3.1.2. As discussed earlier, at midline, most learners performed at a lower level than at baseline; they lack foundational letter sound knowledge, though they may recognize and as a result recall some familiar sight words in the oral reading passages. Also, most of the learners (close to 70 percent) assessed at midline are unable to decode a single word, as indicated by the non-word reading results.

TABLE 12: ORAL READING FLUENCY AND ORAL READING COMPREHENSION ZERO SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE

Oral Reading Fluency Zero Scores								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	64.1%	73.6%	61.2%	62.6%	75.0%	64.5%	55.9%	53.1%
Midline	68.8%	74.6%	68.0%	63.0%	79.8%	69.4%	73.1%	61.1%
Difference	4.8%	1.0%	6.9%	0.4%	4.8%	4.9%	17.2%	8.0%
Significance	***	None	None	None	None	None	***	**
Oral Reading Comprehension Zero Scores								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	71.9%	76.7%	75.5%	72.9%	81.6%	72.7%	67.9%	50.5%
Midline	75.0%	75.8%	79.5%	69.9%	88.2%	79.7%	82.5%	53.6%
Difference	3.1%	-0.9%	4.0%	-2.9%	6.7%	7.0%	14.6%	3.2%
Significance	***	None	None	None	**	None	***	None

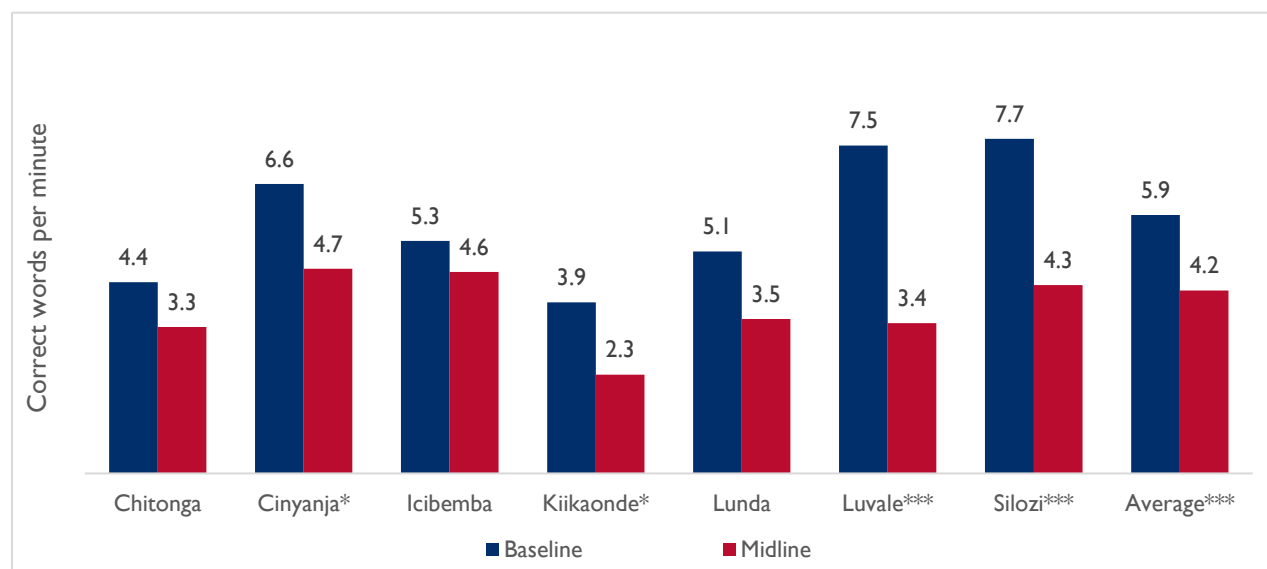


**READING COMPREHENSION.** Overall, at midline, 75 percent of all learners could not answer a single comprehension question correctly. There is a statistically significant 3.1 percentage point increase from the baseline to the midline in the overall percentage of students that scored zero in this subtask, either because they did not read far enough to be asked questions or because they did not comprehend what they read. Given that oral reading fluency is a strong predictor of reading comprehension, these results are consistent with findings from the previous subtask as overall, close to 69 percent of learners could not decode a single word in the oral reading fluency subtask at midline. Table 12 shows that only increases for Kiikaonde and Luvale are statistically significant. As the language with the highest increase between baseline and midline in the percent of students with zero scores in reading fluency, it is unsurprising that Luvale also had the highest increase—a 14.6 percentage point difference—in zero scores in reading comprehension between both periods. Results are especially worrisome for Kiikaonde learners, as almost 9 out of 10 students are scoring zero in reading comprehension.

### 3.1.3.2. AVERAGE SCORES IN ORAL READING FLUENCY

Average midline and baseline reading fluency scores for each language are shown in Figure 4. Overall, the average score for ORF was 5.9 cwpm at baseline, and 4.2 cwpm at midline, indicating that, three years later, learners are reading with less speed and accuracy. At midline, there was a statistically significant reduction of 1.7 cwpm from the baseline result. Reductions from baseline results were statistically significant for Cinyanja, Kiikaonde, Luvale, and Silozi. Additionally, 1.7 fewer correct words per minute is equivalent to a 29 percent reduction in correct words per minute, which means that at midline, on average, students were only reading approximately two thirds of what they read at baseline, representing an important reduction.

FIGURE 4: AVERAGE ORAL READING FLUENCY SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE



Note: \*\*\*, \*\*, and \*, respectively, represent significance at 1 percent, 5 percent, and 10 percent levels for difference between baseline and midline results.

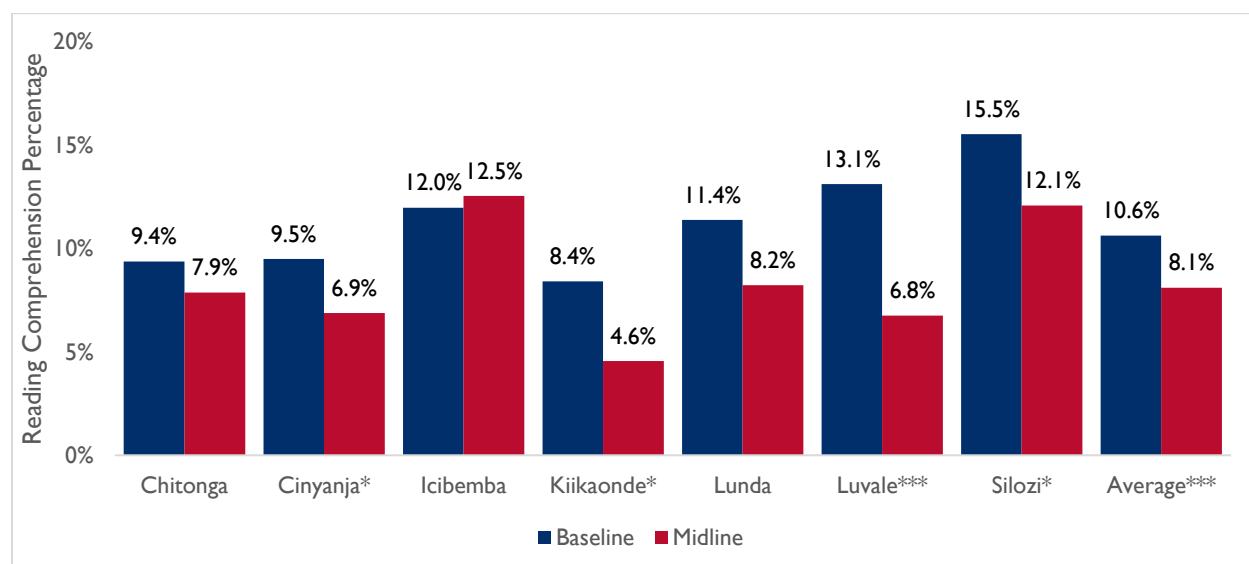
When looking at changes in reading fluency scores between the baseline and midline for each language individually, Figure 4 shows that all languages experienced reductions in oral reading fluency, and that these reductions vary from a high of a 4.1 cwpm (54 percent) reduction for Luvale, to a low of 0.7 a

cwpm (13 percent) reduction for Icibemba. Similar to the results of previous subtasks at midline, and in line with baseline trends, at 2.3 cwpm, Kiikaonde learners tended to have the lowest average scores in oral reading fluency. Cinyanja, Icibemba and Silozi learners had the highest oral reading fluency scores, at 4.7, 4.6 and 4.3 cwpm, respectively. Section 3.3 analyzes the extent to which students are meeting or not MoE reading benchmarks.

### 3.1.3.3. AVERAGE SCORES IN READING COMPREHENSION

To assess learners' ability to extract meaning from the oral reading passage, the assessor asked each learner up to five reading comprehension questions. Since how much of the passage the learners read in the oral reading fluency subtask determines how many comprehension questions they are asked, the average score includes correct, incorrect, and was not asked responses. Questions can be literal, whereby the learner has to recall simple who, what, and when facts from the passage, or they can be inferential. Inferential questions require learners to use their own prior knowledge of the world and clues from the story to answer the question. Oral reading comprehension results are shown in Figure 5.

FIGURE 5: AVERAGE ORAL READING COMPREHENSION SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE



Note: \*\*\*, \*\*, and \*, respectively, represent significance at 1 percent, 5 percent, and 10 percent levels for difference between baseline and midline results.

Overall, the average score for reading comprehension was 10.6 percent at baseline, and 8.1 percent at midline, a statistically significant reduction of 2.5 percentage points (equivalent to 24 percent) compared to the baseline score. Reductions were statistically significant for Cinyanja, Kiikaonde, Luvale, and Silozi. Midline results indicate that, on average, students only understood about 75 percent of what they were understanding at baseline, representing an important reduction. When looking at changes for each language individually, Figure 5 shows that all languages, except for Icibemba, experienced reductions in oral reading comprehension. These results are consistent with the previous reading fluency subtask.

In terms of comprehension questions, midline results show that, on average, learners answered less than half a question correctly of the total possible five reading comprehension questions. This indicates that the learners understand very little of what they read and also that many are not able to read enough to be able to extract meaning.

### 3.1.4. ENGLISH READING PERFORMANCE: VOCABULARY AND LISTENING COMPREHENSION

As mentioned in Section 1, the MoE mandates that one of the seven GRZ-designated Lols be used as the primary Lol for Grades 1 to 4 in all primary schools nationwide. In addition, English is taught beginning in Grade 2 as an additional subject (UNICEF 2016b). To assess learners' oral language and vocabulary skills in English, the Midline EGRA assessment follows the same methodology as the 2018 Baseline, including both a listening comprehension and an English vocabulary subtask. Much like the listening comprehension subtask in the Lol, for the English listening comprehension subtask, learners listen to an assessor read a short passage to them and then they are asked to respond to five comprehension questions. For the English vocabulary subtask, learners are asked to identify body parts, classroom objects, and spatial relationships indicated by the assessor (for example, behind, in front, over, and under).

#### 3.1.4.1. ZERO SCORES IN ENGLISH VOCABULARY AND LISTENING COMPREHENSION

Table 13 shows the average zero scores at baseline and midline for the English vocabulary and English listening comprehension subtasks. It also shows the difference between baseline and midline zero scores and the statistical significance of this difference. Overall, there was no notable change between the percentage of learners with zero scores in the English vocabulary subtask at baseline and at midline. As shown in Table 13, at midline, 0.30 percent of learners scored zero in English listening comprehension, compared to 0.29 percent at baseline, which represents a 0.01 percentage point increase (one in ten thousand students). This indicates that nearly all learners have at least some knowledge of English vocabulary. This is to be expected as Zambia's official language is English. Although there are more than 70 languages and dialects spoken throughout the country, almost all Zambians can speak or understand some English, while Zambians living in urban areas are generally able to speak English fluently (Discover Africa, 2022). In terms of results for each language individually, certain languages show an increase in the percent of learners with zero scores between the baseline and midline, while others show a decrease. However, with the exception of Kiikaonde, these differences are not statistically significant and are too small to have any weight in the results of this subtask.

When looking at the overall zero scores for English listening comprehension, results show a small improvement from baseline scores. Weighted averages of the midline and baseline zero scores show that there was a 1.6 percentage point reduction in the share of learners that scored zero, but this reduction is not statistically significant, except for in the case of Kiikaonde for which there was a 20 percentage point increase in the share of learners scoring zero between baseline and midline. The USAID Education Data Activity team has not found any evidence related to why this sudden change may have occurred, however, scores at midline are in line with the performances of learners in other language categories.

TABLE 13: ENGLISH VOCABULARY AND LISTENING COMPREHENSION ZERO SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE

English Vocabulary								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silози
Baseline	0.29%	0.1%	0.4%	0.2%	0.00%	0.1%	0.1%	0.4%
Midline	0.30%	0.1%	0.5%	0.3%	0.05%	0.0%	0.0%	0.2%
Difference	0.01%	0.0%	0.1%	0.0%	0.05%	-0.1%	-0.1%	-0.2%
Significance	***	None	None	None	***	None	None	None
English Listening Comprehension Zero Scores								

Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	46.0%	36.4%	48.9%	56.6%	24.2%	59.0%	42.8%	54.2%
Midline	44.4%	38.5%	43.1%	60.6%	44.4%	55.9%	41.8%	48.1%
Difference	-1.6%	2.1%	-5.8%	3.9%	20.2%	-3.1%	-1.0%	-6.1%
Significance	None	None	None	None	***	None	None	None

### 3.1.4.2. AVERAGE SCORES IN SCORES IN ENGLISH VOCABULARY AND LISTENING COMPREHENSION

Table 14 summarizes the average performance in both English sub-tasks at baseline and at midline. At midline, the overall average score in English vocabulary is 7.6, a reduction of 0.3 words compared to baseline results. This small reduction is statistically significant but is too small to influence results. In terms of individual languages, there was a small increase in the average English vocabulary score for students assessed in Chitonga, Icibemba, and Lunda, but only the increase for Icibemba learners is statistically significant (at the 10 percent level). At midline, learners assessed in Silozi showed the highest decrease in vocabulary scores, scoring an average of one less percentage point than the baseline score (equivalent to a 12.5 percent reduction).

In terms of English listening comprehension, as shown in Table 14, the average score increased by just 0.7 percentage points between baseline and midline. However, this increase is not statistically significant. The only significant change was a reduction of 7.8 percentage points between baseline and midline for learners assessed in Kiikaonde. Overall, students were able to respond to less than one listening comprehension question, which suggests that they know some vocabulary (as evidenced in the English Vocabulary sub-task), but that vocabulary is fairly limited or not developed enough to actually understand much when listening to English.

TABLE 14: ENGLISH LISTENING COMPREHENSION AND VOCABULARY AVERAGE SCORES FOR BASELINE AND MIDLINE, BY LANGUAGE

English Vocabulary								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	7.9	8.6	7.5	6.7	9.6	7.4	7.7	8.1
Midline	7.6	8.8	7.3	7.1	8.8	7.6	7.5	7.1
Difference	-0.3	0.2	-0.2	0.4	-0.9	0.2	-0.2	-1.0
Significance	***	None	None	*	*	None	None	***
English Listening Comprehension Score								
Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Baseline	17.1%	22.0%	14.8%	12.8%	30.0%	13.3%	18.5%	13.2%
Midline	17.7%	21.6%	17.3%	12.1%	22.2%	13.8%	17.3%	15.1%
Difference	0.7%	-0.5%	2.5%	-0.7%	-7.8%	0.5%	-1.2%	1.9%
Significance	None	None	None	None	***	None	None	None

### 3.1.5. REGRESSION: ORAL READING FLUENCY CHANGE OVER TIME

In this sub-section, we used inferential analysis through an Ordinary Least Squares (OLS) regression to compare the baseline and midline results for the ORF sub-task by Lol.<sup>9</sup> Differences between baseline and midline results are tested with t-student scores. Results with a p-value of less than 0.05 are considered statistically significant. The dependent variable for our model is ORF, measured as cwpm. The independent variable in the regression is a factor variable for time that differentiates between baseline (zero) and midline (one). The model to identify the change between baseline and midline of Grade 2 learners is the following:

#### EQUATION 2

$$Y_i = \beta_0 + \delta T_i + \varepsilon_i$$

For learner  $i$  in school  $j$ , where  $Y_i$  is the reading scores of learner  $i$ . Hence, the outcome is a function of  $\delta$  the treatment effect (equal to 1 for all learners),  $T_i$  the time factor indicator/learner (0 baseline, 1 midline), and  $\varepsilon_i$  is the remaining error that is present. For this model we used OLS and conducted separate analyses in the different Lols. Table 15, included below, summarizes the results by Lol.

TABLE 15: ORAL READING FLUENCY CHANGE FROM BASELINE TO MIDLINE

	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
Observations	5,944	5,698	3,255	3,125	3,060	2,708	6,129
R Squared	0.0126	0.0202	0.0008	0.0131	0.0163	0.0260	0.0139
Constant Coefficient	4.8051	8.1422	4.7446	4.6821	5.1280	6.5938	6.7144
Constant Prob	***	***	***	***	***	***	***
Time Coefficient	-1.8557	-2.9890	-0.4698	-2.0052	-2.1381	-3.1672	-2.3061
Time Prob	***	***	None	***	***	***	***

Note: \*\*\*, \*\*, and \*, respectively, represent significance at 1%, 5%, and 10% levels

As shown in Table 15, the time coefficient (baseline versus midline results) is negative and statistically significant at the 1 percent level for all languages except for Icibemba. This analysis differs from previous t-tests conducted for mean scores in that it accounts for both a constant and time effects in reading performance. These results show that, on average, keeping all other factors constant, results at midline are indeed statistically lower than baseline for Chitonga, Cinyanja, Kiikaonde, Lunda, Luvale, and Silozi. For Chitonga, for example, the regression results indicate that, keeping all other factors constant, students at midline read an average of 1.8 fewer cwpm than students at baseline. A higher coefficient for time means that there is a greater difference in results for midline and baseline. For example, Luvale students reduced their reading fluency score by on average, 3.1 cwpm when keeping everything else constant. Section 3.4 includes a regression with additional covariates to identify significant predictors of ORF at midline (not accounting for change in time).

<sup>9</sup> As shown in Sub-sections 3.1.2 and 3.1.3, it is clear that reading performance for initial reading skills and higher-level skills have decreased over time.

### 3.2. RQ 2: TO WHAT EXTENT DOES GENDER OR SCHOOL TYPE AFFECT READING PERFORMANCE?

To answer this question, we investigated the differences in reading performance at midline by subtask, comparing results by school type and gender. We also analyzed changes in performance between baseline and midline. Main takeaways are presented in the textbox to the right.

#### 3.2.1. READING PERFORMANCE RESULTS BY SCHOOL TYPE

In Zambia, primary schools can be classified into two primary types:

- 1) Government-run primary schools, which make up 77 percent of all schools nationwide (MoE, 2020). These schools are run by district education offices within MoE.
- 2) Community-run schools, which make up 25 percent of all schools and are often free and run by parents or other community members (Frischkorn and Falconer-Stout 2016).

#### Main Takeaways – RQ 2

*Findings by school type.* At midline, with an average score of 4.3 cwpm, **learners from GRZ schools performed up to 19 percent higher in oral reading fluency than learners from community schools**, who received an average score of 3.6 cwpm. This difference is statistically significant at the one percent level. Between baseline and midline, learners from GRZ schools experienced a 30 percent reduction in their ORF. In contrast, community schools experienced an 18 percent reduction.

*Findings by gender.* At midline, with an average score of 4.5 cwpm, **girls performed approximately 15 percent better in ORF than boys**, who received an average score of 3.9 cwpm. However, this difference is not statistically significant. Between baseline and midline, both girls and boys experienced about a 30 percent reduction in their ORF.

Recently, the government has offered support to community schools in the form of professional development to untrained community schoolteachers. The government has also deployed trained teachers to some community schools. In addition to school grants, the government is providing support to community schools for infrastructure development.

In the midline sample, 23 percent of schools were community-run schools, and the remaining 77 percent were government-run schools. As reported by USAID (2016), community schools' heavy reliance on volunteer teachers can trigger high turnover and less stability in the classroom. Volunteer teachers represent about 60 percent of community schoolteachers, demonstrating community buy-in and commitment. Yet, with an average retention of only three years, the high rate of teacher turnover leads to difficulties in maintaining teacher capacity as well as teacher shortages. Additionally, community schools vary widely in their access to school resources, however, they tend to have fewer material and human resources than government schools. Community school learners are generally more disadvantaged than government school learners; they are often older and come from poorer, less educated households than government school learners. They also experience high dropout and absenteeism rates, further disadvantaging them in the classroom (USAID, 2016). All these factors combined can lead to performance differences between community schools and government schools.

Table 16 shows the percentage of learners from GRZ-run primary schools and community schools who received zero scores for all subtasks. It presents both baseline and midline data. Results by language are analyzed in section 3.1.1 to 3.1.3. As shown in Table 16, there was a higher percentage of zero scores for all subtasks among learners who attend community schools in comparison to GRZ-run primary schools. For community-run schools, at midline, there has been an increase of learners with zero scores



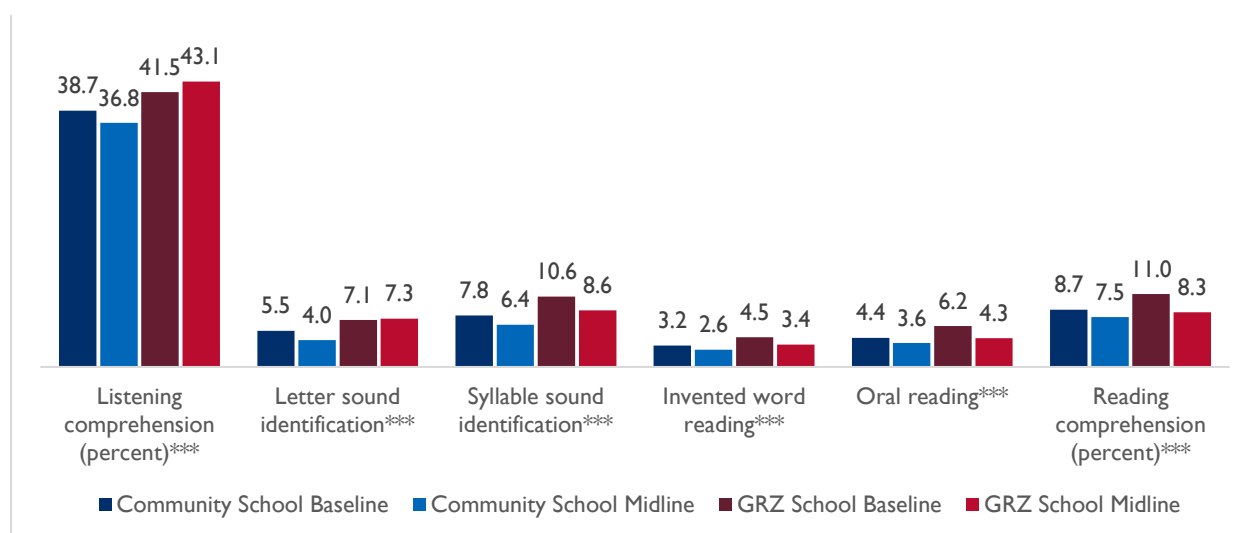
for the letter sound identification, syllable sound identification, non-word reading, oral reading, and reading comprehension sub-tasks when compared to baseline results. Only the listening comprehension sub-task showed a reduction of learners with zero scores. When looking by individual sub-task, the letter sound identification task had the highest percentage point increase in students with zero scores, at almost 12 percentage points more.

TABLE 16: ZERO SCORES BY EGRA SUB-TASK AND TYPE OF SCHOOL AT BASELINE AND MIDLINE

Sub-task	Community School			Government-Run School		
	Baseline	Midline	Diff. Baseline vs. Midline	Baseline	Midline	Diff. Baseline vs. Midline
Listening comprehension	23%	21%	-2.2%	17%	17%	0.1%
Letter sound identification	47%	59%	11.8%**	38%	34%	-3.5%***
Syllable sound identification	60%	67%	6.5%***	49%	49%	0.3%***
Non-word reading	72%	78%	5.7%***	65%	68%	3.1%***
Oral reading	72%	78%	6.5%***	63%	66%	3.6%***
Reading comprehension	78%	79%	0.6%**	71%	74%	3.2%***

As can be seen in Table 16, at midline, government-run schools saw an increase in the percentage of students with zero scores compared to baseline, albeit the increase is smaller than that experienced by community-run schools. This indicates that learners from community schools reported a higher performance reduction in reading skills than students from government-run schools. Lastly, when comparing midline results by school type, it is notable that GRZ schools have significantly fewer students with zero scores than community-run schools. Letter sound identification shows the highest difference between both groups at almost 25 percentage points. Listening comprehension is the task with the smallest difference in zero scores, at only four percentage points. Except for the listening comprehension subtask, all zero score differences are statistically significant for community-run and government-run schools at the five percent or one percent level.

FIGURE 6: AVERAGE SCORES FOR GRZ AND COMMUNITY SCHOOLS AT BASELINE AND MIDLINE



As discussed in Section 3.1., the increase in zero scores in each of the reading subtasks translates to a reduction in average reading performance for the different reading skills. This is reflected in Figure 6, which shows the difference between average scores for reading skills at midline for community-run and government-run schools and the percentage change from baseline to midline by school type.

As shown in Figure 6, overall, at midline, students attending government-run schools performed better than students from community-run schools in all EGRA sub-tasks. At midline, with an average score of **4.3 cwpm**, learners from GRZ schools performed up to 19 percent higher in ORF than learners from community schools, who received an average score of 3.6 cwpm. Differences for all sub-tasks are statistically significant at the one percent level. When looking at the differences in average scores at midline, letter sound identification has the widest gap, with learners coming from GRZ schools performing more than 80 percent higher than students from community-run schools. Reading comprehension has the lowest gap in performance, with students from GRZ schools performing 10.2 percent better than students from community schools.

When looking at the changes from baseline to midline by school type, there are mixed results. For example, students from GRZ schools improved their performance by 4 percent and 3 percent, respectively, for the listening comprehension and letter sound identification subtasks. The performance of students from community schools decreased by 5 and 26 percent, respectively, for the same tasks. Additionally, for syllable sound identification, non-word reading, oral reading fluency, and oral reading comprehension, students from GRZ schools experienced a higher percent decrease in performance than students from community-run schools. For example, learners from GRZ schools experienced a 30 percent reduction in their ORF, compared to the 18 percent reduction experienced in community schools. **Overall, GRZ schools performed better than community schools, even though GRZ schools had a higher performance reduction from baseline to midline compared to community schools. At midline, the performance gap between community schools and GRZ schools has been reduced.**

Using the data collected from the teacher questionnaire, USAID Education Data activity looked at whether teacher characteristics might be influencing these differences and **found evidence that teachers from GRZ schools are better qualified and have more experience in teaching than teachers from community schools.** Indeed, teachers from GRZ schools were found to have 12.5

percent more years of experience than teachers from community schools. More specifically, GRZ schoolteachers had an average of 9.95 years of experience compared to 8.84 years for community schoolteachers. Additionally, when looking at their professional qualifications, 70 percent of GRZ schoolteachers reported having a teacher certificate, while only 40 percent of community-run schoolteachers reported having one. Similarly, 4.8 percent of GRZ schoolteachers reported not having any professional qualification; this measure increases to 33.5 percent in the case of community schoolteachers. Results also show that teachers from GRZ schools reported receiving about 15 percent more in-service training sessions from the USAID Let's Read Project as teachers from community schools reported receiving an average of 1.05 training sessions during the last year, while teachers from GRZ schools reported receiving an average of 1.2 training sessions.

### 3.2.2. READING PERFORMANCE RESULTS BY GENDER

As presented and discussed in the overall results section, the percentage of zero scores at midline is higher than the percentage of zero scores at baseline for most subtasks. This trend can also be seen when looking at zero scores by gender. Table 17 shows the percentage of girl and boy learners with zero scores at baseline and midline for each subtask. Results by language are analyzed in section 3.1.1 to 3.1.3. Between baseline and midline, there was a statistically significant reduction of 0.7 percentage points in the percent of girls with zero scores for letter sound identification. However, girls received increased zero scores for the rest of the subtasks. Except for the listening comprehension subtask, performance differences for girls for each subtask between baseline and midline are statistically significant. Increases in zero scores varied from 1.1 percentage points to 3.1 percentage points. Boys experienced a non-statistically significant one percentage point reduction in zero scores in the listening comprehension subtask. The rest of the subtasks showed statistically significant increases in zero scores that go from 1.3 to 6.5 percentage points. On average, at midline, boys had more zero scores than girls in all sub-tasks except for listening comprehension.

TABLE 17: ZERO SCORES BY EGRA SUB-TASK AND GENDER

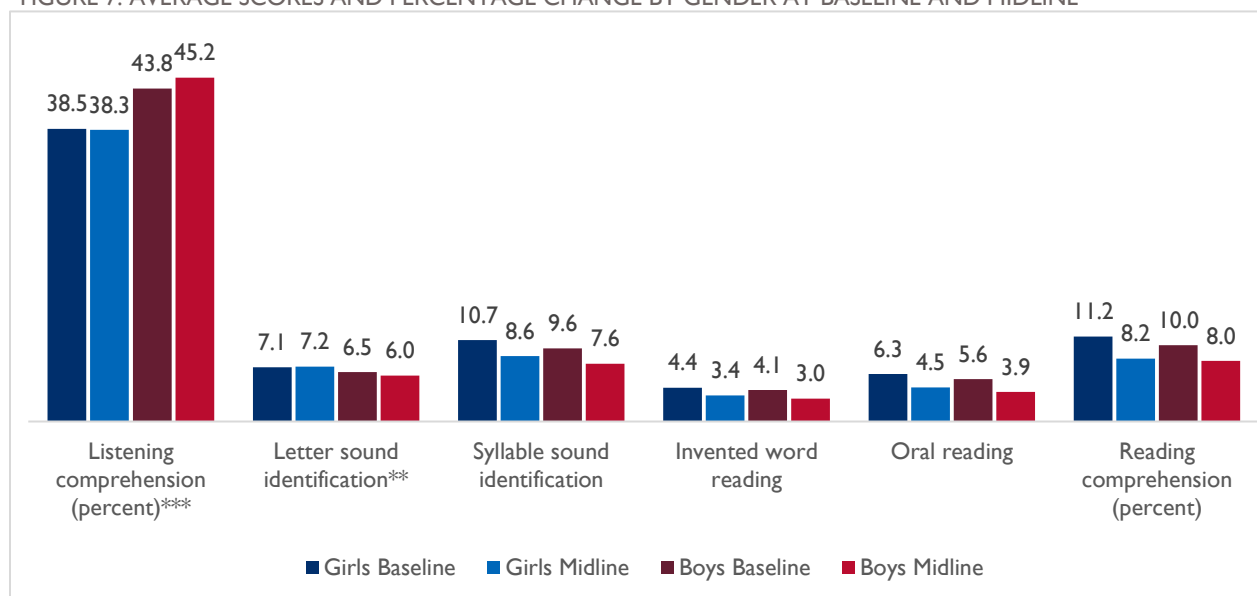
Sub-task	Girls			Boys		
	Baseline	Midline	Diff. Baseline vs. Midline	Baseline	Midline	Diff. Baseline vs. Midline
Listening comprehension	21%	22%	1.1%	14%	13%	-1.0%
Letter sound identification	39%	38%	-0.7%**	39%	41%	1.3%***
Syllable sound identification	49%	50%	1.2%***	53%	56%	3.2%***
Non-word reading	66%	69%	2.5%***	66%	72%	5.5%***
Oral reading	64%	67%	2.9%***	65%	71%	6.5%***
Reading comprehension	71%	74%	3.1%***	73%	76%	3.0%***

As shown in Figure 7, in terms of average scores, at midline, girls performed better than boys in all EGRA subtasks except for listening comprehension. However, only performance differences for listening comprehension and letter sound identification are statistically significant. This indicates that especially for the initial and higher-level reading skills, girls and boys are performing at basically the same level. When looking at differences in average performance between girls and boys at midline, listening comprehension has the widest gap by gender, with boys performing 18 percent higher than girls. Much like results by school type presented in the previous section, reading comprehension has the smallest gap in performance, with boys performing three percent lower than girls. **At midline, with an**

average score of 4.5 cwpm, girls performed approximately 15 percent better in ORF than boys who received an average score of 3.9 cwpm. However, this difference is not statistically significant.

When looking at changes in average scores from baseline to midline by subtask, there are mixed results as well. For example, boys improved their performance by three percent for listening comprehension, while girls experienced a small one percent increase in letter sound identification. Performance for boys decreased more, or slightly more than girls in letter sound identification, syllable sound identification, non-word reading, and reading fluency. However, performance changes between baseline and midline are not drastically different by gender. For example, the 28.5 percent performance reduction in ORF for girls is only slightly lower than the 29.8 percent reduction experienced by boys. **Performance reductions for girls and boys over time are so similar that, for the most part, we can say that both groups were equally affected by school closures and education system challenges due to the COVID-19 pandemic.**

FIGURE 7: AVERAGE SCORES AND PERCENTAGE CHANGE BY GENDER AT BASELINE AND MIDLINE



These results are consistent with findings from other researchers. In the earliest stages of language learning, there are differences found between boys and girls, in that the girls are superior to boys in acquiring speech. They also have a larger vocabulary. Coates (2004) mentions that even at 18 months old, the number of words that are known to girls tends to be higher than the number of words known to boys. Hence, girls acquire linguistic skills more quickly than boys. At pre-school age, girls remain ahead of boys in this area. However, by the time children reach their early school years, there is no evident difference between boys and girls in terms of their linguistic skills (Coates, 2004).

**Given that most task performance differences between girls and boys are not statistically significant, it is unsurprising that boys and girls from the study sample share similar characteristics.** For example, 39.6 percent of girls, and 39.3 percent of boys reported being absent from school at least one day during the last week. Similarly, 33.3 percent of girls and 33.5 percent of boys reported reading a book at school the day before the EGRA assessment. When asked about how often they read at home, 53.6 percent of girls and 55.9 percent of boys reported doing so sometimes or every day. At 48.13 percent and 45.47 percent respectively, girls and boys also have a similar rate of

ECE attendance. Lastly, 27.4 percent of girls and boys—same result for both—reported receiving school lessons at home while schools were closed.

### 3.3. RQ 3: WHAT ARE THE MIDLINE READING PROFICIENCIES IN THE LANGUAGES OF INSTRUCTION RELATIVE TO THE MOE NATIONAL BENCHMARKS AND USAID LET'S READ PROJECT TARGETS?

In 2015, the MoE set reading benchmarks for Grade 2 learners that apply uniformly across the Lols. The benchmarks divided learners into three proficiency levels: non-reader, emergent reader, and reader (RTI International, 2015). Objective two of the USAID Let's Read Project requires that 40 percent of learners attain the MoE stipulated proficiency levels in all non-word reading, oral reading, and reading comprehension subtasks (USAID, 2018; USAID, 2019).

#### Main Takeaways – RQ 3

**The percentage of learners reaching the minimum level reading proficiency set by the MoE decreased from eight percent at baseline to four percent at midline.** Learners from Cinyanja (56.6 percent decrease), Luvale (57.1 percent decrease) and Silozi (61.2 percent decrease) were the most affected.

**A total of 4.02 percent of learners moved down from the emergent readers category to the non-readers category.**

TABLE 18: MOE READING BENCHMARKS FOR GRADE 2

Subtask	Non-Reader	Emergent Reader / Minimum Level	Fluent Reader / Grade Level Proficiency
Non-word reading	0 to 14	15 to 29	30 or more
Oral reading	0 to 19	20 to 44	45 or more
Reading comprehension	0% to 39% (0 or 1 correct)	40% to 79% (2 or 3 correct)	80% or more (4 or 5 correct)

This section presents the results for two USAID standard indicators:

- **ES. I.1. Percent of learners targeted for U.S. Government assistance who attain a minimum grade-level proficiency in reading at the end of Grade 2.** To calculate the percentage of learners achieving the *overall* minimum level reading proficiency, we aggregated the results as follows: a student with minimum grade reading proficiency must meet the minimum level proficiency in non-word reading, oral reading fluency, and reading comprehension simultaneously (must meet the three benchmarks). For Let's Read, we also present the percentage of learners that meet the minimum level for both the oral reading and the reading comprehension tasks.
- **ES. I.48. Percent of learners targeted for U.S. Government assistance with an increase of at least one proficiency level in reading at the end of Grade 2.** To report on this indicator, we present the results of the percentage of learners that have moved from non-readers to emergent readers, and from emergent readers to fluent readers, according to the benchmarks for each subtask. In line with the USAID Let's Read project ES.I-48 Performance Indicator Reference Sheet, the following formula will be used:

*baseline - midline for "non-reader" + midline - baseline for the "minimum level" + midline - baseline for "grade level" categories.*

#### 3.3.1. ES.I.1. PROPORTION OF LEARNERS WHO ATTAIN A MINIMUM GRADE-LEVEL PROFICIENCY

This section presents an analysis of the percentage of learners who meet the minimum grade proficiency levels (refer to Table 18 included above) according to their scores on each subtask, with benchmarks for



non-word reading, oral reading fluency, and oral reading comprehension. Table 19 shows weighted proportions of learners by subtask as well as aggregated results for the whole sample.

TABLE 19: PERCENTAGE OF LEARNERS MEETING MOE MINIMUM LEVEL BENCHMARKS AT MIDLINE, BY GENDER, BY SCHOOL TYPE AND ECE ATTENDANCE

Items	Assessment	All	Boys	Girls	Community School	GRZ School	Attended ECE	Did not attend ECE
Non- Word Reading	Baseline	12.5%	11.4%	13.7%	8.1%	13.4%	13.7%	11.7%
	Midline	7.9%	6.7%	8.4%	7.1%	8.2%	9.0%	6.8%
Oral Reading Fluency	Baseline	13.3%	11.7%	14.9%	10.1%	13.9%	14.3%	12.6%
	Midline	7.4%	6.6%	8.3%	8.5%	7.2%	7.6%	7.3%
Reading Comprehension	Baseline	15.3%	14.5%	16.1%	13.6%	15.6%	16.2%	14.5%
	Midline	10.3%	10.6%	10.0%	8.9%	10.6%	10.8%	9.7%
Overall	Baseline	8.1%	6.8%	9.2%	5.9%	8.5%	9.0%	6.9%
	Midline	4.0%	3.6%	4.5%	4.6%	3.9%	4.9%	3.2%

**PERCENTAGE OF LEARNERS REACHING A MINIMUM LEVEL READING PROFICIENCY.** As shown in Table 19, at baseline, about eight percent of students reached the minimum proficiency level. However, given the decrease in performance experienced by learners for each individual sub-task at midline, the overall percentage of learners reaching a minimum level reading proficiency decreased to approximately four percent at midline. Following the same trends as for the baseline benchmarks, a slightly greater percentage of girls met the benchmarks in all the three subtasks as compared to boys. However, the differences between both groups were not statistically significant. When looking at the results by school type, there are some interesting differences between baseline and midline. At baseline, more learners in GRZ-run primary schools met the benchmarks relative to learners in community-run schools in all subtasks. These differences were statistically significant at the one percent level. However, at midline, a slightly greater percentage of learners from community schools met the minimum level benchmark than GRZ-schools. This change is related to the smaller decrease in the percent of learners that did not meet the ORF benchmark in community schools when compared to GRZ schools. Additionally, as stated in Section 3.2.1, GRZ schools experienced a higher decrease in reading performance than community schools. Learners who reported that they attended ECE programs were more likely to meet the benchmarks for each of the three subtasks than those who did not, both at baseline and at midline.

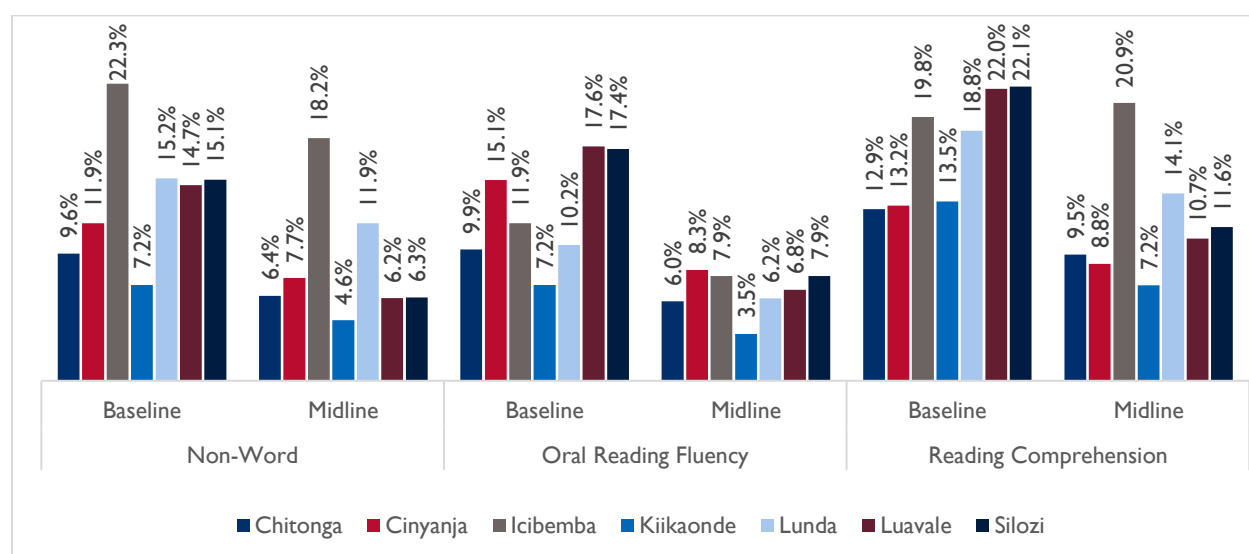
**NON-WORD READING.** At midline, there is an increase of approximately five percentage points in the share of learners that are non-readers, that is, learners reading less than 15 non-words per minute. The increase in non-readers is equal to a decrease in the percentage of learners that reach the minimum level, that is, learners reading between 15 and 29 correct non-words per minute. The share of learners that meet the minimum level benchmark for non-word reading fluency has decreased from 12.5 percent at baseline to 7.9 percent at midline. Lastly, at midline, there is also a decrease in the percent of learners that achieve grade-level proficiency, that is, that are fluent readers, with only 0.4 percent reaching the grade level proficiency (down from 0.8 percent at baseline). Decreases in initial reading skills, analyzed in Section 3.1.2, led to a decrease in the overall percentage of learners that meet this benchmark.

**ORAL READING FLUENCY.** At midline, there is also an increase of around six percentage points in the share of learners that are non-readers in the oral reading sub-task. This means that they read less than 19 correct words per minute. There is also a decrease in the percentage of learners that reach the minimum level, that is, learners reading between 20 and 44 correct words per minute. The share of learners that meet the minimum level benchmark for ORF has decreased from 13.3 percent at baseline to 7.4 percent at midline. Lastly, at baseline and midline, there are no students with grade level proficiency in ORF.

**ORAL READING COMPREHENSION.** At midline, there is an increase of around five percentage points in the share of learners that are non-readers in the oral reading comprehension sub-task. This means that they were able to answer up to one reading comprehension question. There is also a decrease in the percentage of learners achieving the minimum level, that is, learners that are able to answer two to three comprehension questions correctly. The percentage of learners that meet the minimum level benchmark for reading comprehension decreased from 15.3 percent at baseline to 10.3 percent at midline. Lastly, at baseline and midline, there are no students with grade level proficiency in oral reading comprehension.

Figure 8 shows the percentage of learners meeting the MoE benchmarks by language. All languages show decreases in the percentage of learners achieving the MoE benchmarks between baseline and midline. Cinyanja (56.6 percent decrease), Luvale (57.1 percent decrease), and Silozi (61.2 percent decrease) present the highest decreases, and all decreases from baseline to midline for these three languages are statistically significant.

FIGURE 8: PERCENT OF STUDENTS REACHING MOE MINIMUM LEVEL BENCHMARKS FOR BASELINE AND MIDLINE, BY LANGUAGE



Kiikaonde continues to be the language with the lowest percentage of learners that are meeting the MoE benchmarks, with only 3.5 percent of learners meeting the ORF benchmark. While it may seem logical to make comparisons between these results, differences in characteristics inherent to each language may explain these trends. For example, Kiikaonde could have a relatively less transparent orthography versus other languages, and, as a result, it would be more difficult for learners to master all the different sounds each letter and syllable can make. Consultation with local language experts can help shed light on whether there are significant differences in language characteristics in the seven Lols in Zambia. Further

research is also needed to examine whether these nuanced differences may be relevant for learners' performance, as well as for instructional methods.

For the Let's Read project USAID's ES.I.1 indicator, we analyzed the percent of learners who meet an ORF score of 20 cwpm and answer at least 40 percent of comprehension questions correctly. These results correspond to the minimum level proficiency for both tasks, as outlined by the MoE benchmarks for reading fluency and reading comprehension. Table 20 aggregates these results and presents data on the percentage of learners that meet both benchmarks.

TABLE 20. ES.I.1-PERCENT OF STUDENTS REACHING MINIMUM LEVEL BENCHMARKS FOR ORAL READING FLUENCY AND COMPREHENSION FOR BASELINE AND MIDLINE, BY LANGUAGE

Items	All	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luavale	Silozi
Baseline	10.2%	8.4%	10.4%	10.8%	6.3%	9.7%	15.1%	13.5%
Midline	5.9%	5.4%	5.6%	7.7%	7.7%	5.9%	6.5%	5.7%
Difference	-4.3%	-3.0%	-4.8%	-3.1%	1.4%	-3.7%	-8.7%	-7.8%
Significance	***	***	***	**	**	***	***	***

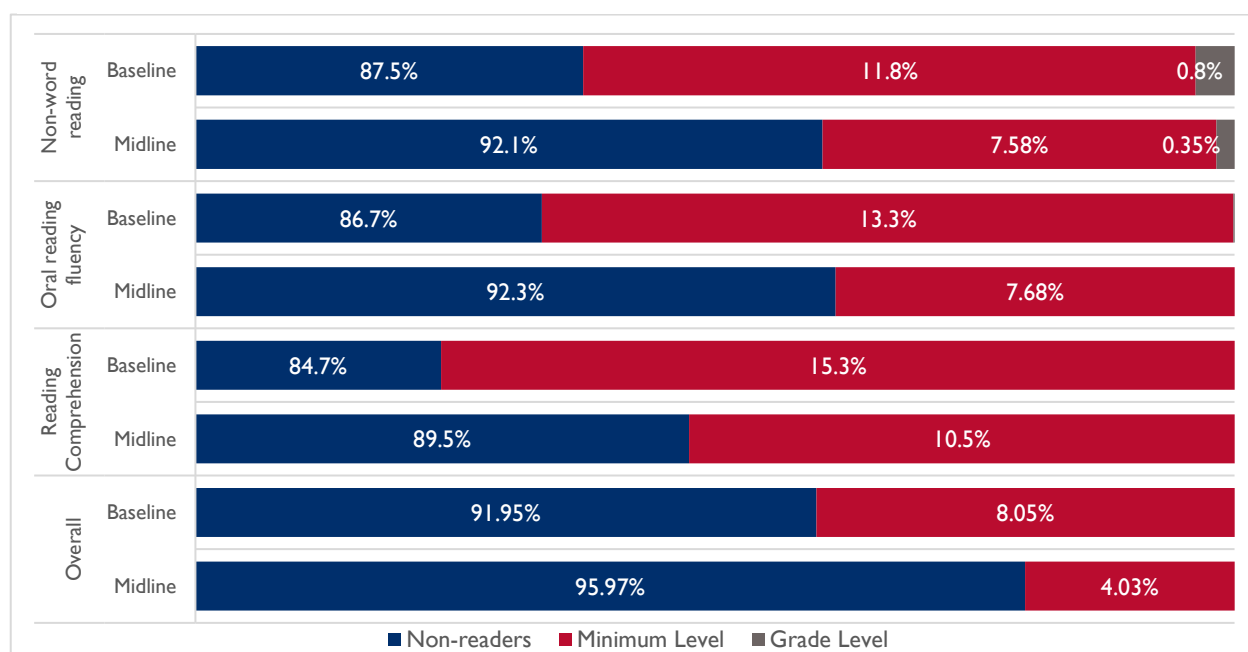
At baseline, about 10.2 percent of learners demonstrated minimum level (or emergent reader) reading fluency and comprehension of grade level texts at the end of Grade 2. At midline, only 5.9 percent of learners reached the minimum level benchmarks for both subtasks. This represents a statistically significant 4.3 percentage point reduction from baseline. As shown in the table 20, all languages except for Kiikaonde experienced reductions in this metric, especially Luavale and Silozi, for which the reductions account for close to 9 and 8 percentage points respectively; in both cases, the reduction between baseline and midline is higher than the percent of learners meeting the benchmarks at midline.

### 3.3.2. ES I.48. LEARNERS WITH AN INCREASE OF AT LEAST ONE PROFICIENCY LEVEL

For USAID's ES.I.48 indicator, we analyzed results by proficiency level. As shown in Table 18, included at the beginning of this section, MoE categorizes readers into three proficiency levels: non-readers, emergent readers, and fluent readers. Figure 9 shows the results by proficiency level at baseline and midline.

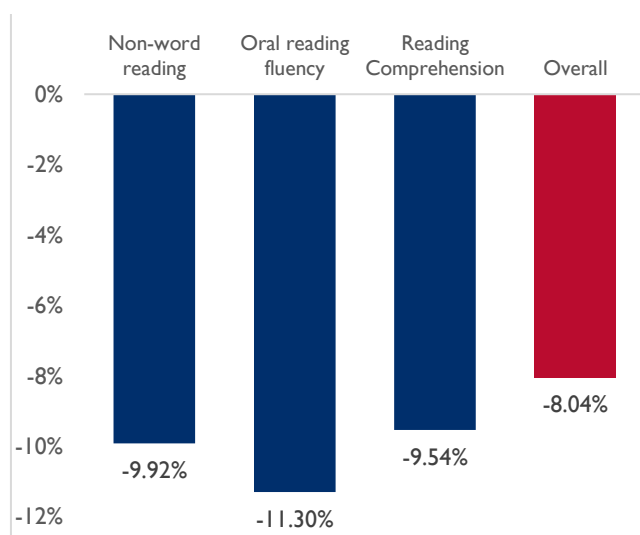
**Overall, at midline, almost 96 percent of Grade 2 learners fall within the non-reader category** as they don't meet the benchmarks for non-word reading, reading fluency, and reading comprehension. When looking at the proficiency levels by task, there has been an increase in the share of learners that fall within the non-reader category across all tasks. Non-readers increased by 4.6 percent for non-word reading, 5.6 percent for reading fluency and 4.8 percent for reading comprehension tasks. A very low 0.8 percent of students reached the grade level proficiency level for non-word reading at baseline. At midline, this value was reduced to 0.35 percent. Zero learners reached the grade level reading proficiency level for reading fluency and reading comprehension both at baseline and midline.

FIGURE 9: PERCENTAGE OF LEARNERS BY PROFICIENCY LEVEL AT BASELINE AND MIDLINE



To report on indicator ES. 1.48, we use the formula presented at the beginning of section 3.3. Overall, as shown in Figure 10, there has been a gross reduction of eight percent of learners across the three EGRA tasks. In terms of net reduction, four percent of learners moved from minimum level readers to non-readers. However, the indicator accounts for both the increase in non-readers and the decrease in the percentage of learners that meet the minimum level proficiency.

FIGURE 10: PERCENTAGE OF LEARNERS WITH AN INCREASE OF AT LEAST ONE PROFICIENCY LEVEL



### 3.4. RQ 4: WHAT ARE THE SIGNIFICANT PREDICTORS OF ORAL READING FLUENCY?

To answer this question, we used inferential analysis with variables from the learner questionnaire and teacher questionnaire that predict learners' midline scores on ORF. The dependent variable for the regression is ORF scores at midline. In order to find a model with the best fit possible, we tried a different set of variables:

- **STUDENT CHARACTERISTICS:** gender information, age, if the student had breakfast at home, if they read books on their own at school, or if they read to someone at home, if there are materials at home for them to read, if they learnt school lessons at home during school closures caused by COVID-19, etc. Additionally, we constructed a socioeconomic index that takes into account several student-level characteristics: having electricity at home, having access to a computer, radio, and/or TV; the quality of water at home; bathroom type at home; among others.
- **TEACHER CHARACTERISTICS:** teacher's level of comfort in the Lol; teacher has access to resources provided by USAID Let's Read Project; teacher provided support during remote learning, teacher pedagogical practices.
- **SCHOOL CHARACTERISTICS:** Language of instruction; if it's a government-run school or community school; if the school has a feeding program; if the school has a library.

**Main Takeaways – RQ 4**  
Factors that have a major influence on ORF performance include reading to others at home, reading a book at school, and reading at home. Learners who frequently read to others at home increase their reading fluency by around 2.7 cwpm. Similarly, learners who reported practicing reading at school the day prior to the EGRA assessment read about 2.9 cwpm more than learners who didn't.

Although the model was run with all the variables listed above, most did not have statistical significance as predictors of the results of ORF scores. Table 21 summarizes the model that best predicts ORF results at midline. In general, most variables included have statistical significance at the 99 and 95 percent confidence level, and two are representative at the 90 percent level.

TABLE 21: PREDICTORS OF ORF, TOBIT ESTIMATES

Dependent variable: Oral Reading Fluency	ALL (N=14,463)		BOYS (N=7,099)		GIRLS (N=7364)	
Independent Variables	Coeff.	Significance	Coeff.	Significance	Coeff.	Significance
Boy	-0.105	None	N/A	N/A	N/A	N/A
Learner age	-0.843	***	-0.872	***	-0.734	***
Learner age square	0.060	***	0.065	***	0.049	***
Learner ate breakfast today	-0.178	None	-0.080	None	-0.287	None
Learner gets family to help with homework	0.406	***	0.477	**	0.330	*
Family reads to learner at home	-0.292	**	-0.272	None	-0.308	None
Learner reads books at school	2.869	***	3.111	***	2.654	***
Teacher praises learner when they do well	0.452	***	0.515	**	0.366	**
Teacher tells letters name and sounds	0.541	***	0.741	***	0.318	None
Teacher uses Lol often in class	1.203	**	1.001	None	1.236	*

Dependent variable: Oral Reading Fluency	ALL (N=14,463)		BOYS (N=7,099)		GIRLS (N=7364)	
Independent Variables	Coeff.	Significance	Coeff.	Significance	Coeff.	Significance
Presence of school library	1.143	***	1.141	***	1.141	***
Learner attended ECE	-0.510	***	-0.919	***	-0.125	None
Absenteeism <sup>#</sup>	-0.506	***	-0.641	***	-0.386	**
Reads frequently to others at home <sup>#</sup>	2.728	***	2.638	***	2.793	***
Materials available to read at home <sup>#</sup>	0.690	***	0.436	***	0.936	***
Learnt school lessons during COVID-19 <sup>#</sup>	1.013	***	0.804	**	1.184	***
Teacher has access to USAID Let's Read Project resources <sup>#</sup>	1.006	***	1.101	***	0.885	**
Teacher LOI different than mother tongue <sup>#</sup>	-0.369	***	-0.411	**	-0.326	*
GRZ school <sup>#</sup>	0.373	**	0.350	None	0.362	*
Socioeconomic index <sup>#</sup>	0.143	***	0.067	None	0.196	***

**Note:** \*\*\*, \*\*, and \*, respectively, represent significance at 1%, 5%, and 10% levels. Variables with a # symbol are variables not tested at baseline but found relevant for the midline EGRA analysis.

The average marginal effect for each factor/independent variable is shown in the coefficient columns in Table 21 for the overall sample assessed. On average, a change in a factor, that is, a change from one binary category to another (yes to a no) or a unit such as age (seven to eight years old), is associated with a change in ORF scores in correct words per minute. The factors that have a greater statistical significance are those derived from the learner's own characteristics, especially whether the student practices reading at school or at home. Interestingly, learner gender was not found to be predictive of or play a role in learning outcomes; instead, both boys and girls perform comparably at midline. Key findings are highlighted next.

### 3.4.1. MAIN CHANGES IN ORAL READING FLUENCY PREDICTORS FROM BASELINE TO MIDLINE.

Some of the factors that were found to be statistically significant predictors of ORF at baseline are not significant predictors at midline, and vice versa.

- **Being a boy** was statistically significant at baseline at the five percent level. However, as was discussed in Section 3.2.2, this factor **is no longer significant at midline**. As shown in section 3.2, boys and girls have similar descriptive characteristics at midline and, overall, their performance is low.
- Learner's age was not significant at baseline but is significant at the one percent level at midline. Overall, learners with a higher age perform better at midline.
- **Eating breakfast the day of the assessment was not significant at baseline, and is still not significant at midline**, even though 48 percent of learners reported not eating breakfast at midline. Furthermore, 71 percent of learners who reported that they did not eat breakfast at midline also reported lacking a feeding program at school (feeding program was not significant at midline and was not tested at baseline).
- At baseline, learners who reported that a family member reads to them at home read up to 6.6 more cwpm than those who reported not having a family member that reads to them. In



contrast, at midline, the coefficient, which continues to be statistically significant, is negative (the coefficient is below zero). At midline, there is a two percent increase in the share of learners who reported that they were never read to at home (from 36.6 percent at baseline to 38.9 percent at midline).

- **At baseline, learners whose teachers used the Lol often in the classroom performed the same as those whose teachers did not use the Lol often. However, at midline, this factor has become statistically significant, overall, and for girls.** At midline, we tested how learners perform when their teachers' Lol and mother tongue are different and found this variable to be statistically significant and to have a negative impact on learners' performance (this factor is analyzed in greater detail below).
- **Lastly, attending ECE at baseline was not statistically significant. At midline, learners' participation in ECE is statistically significant. However, the results are inconsistent as the coefficient is negative, suggesting that learners who attended ECE performed lower than those that did not attend ECE.** This may have to do with the fact that most learners in the midline sample (53 percent) did not attend ECE. Additionally, it is worth noting that second grade learners assessed in 2021 that attended ECE did so in 2019, which also means that there is a high probability that learning was lost due to school closures in 2020 and/or part of 2021. When comparing mean scores (outside the regression), students who went to ECE had on average an ORF of 0.3 cwpm higher than those who did not attend ECE (equivalent to an 8 percent increase). However, this difference is not statistically significant.

### 3.4.2. ORAL READING FLUENCY PREDICTOR TRENDS AT BASELINE AND MIDLINE

Factors related to practicing reading at school, and good teacher pedagogies continue to be significant and positive for improving reading performance.



**PRACTICING READING.** Factors associated with having the opportunity to practice reading, be it at school or at home, have the highest impact on reading fluency at baseline and midline. **At midline, learners who read to others at home increased their reading fluency by 2.7 cwpm. Similarly, learners who reported practicing reading at school the day prior to the EGRA assessment read almost 3 cwpm more than learners who didn't.** These results were the most impactful at baseline and continue to be at midline. However, at midline, only 53 percent of the learners assessed reported that they read to others at home, either occasionally or very often. The rest indicated that they do not read at home. Similarly, most students (about 66 percent) reported that they did not read any books at school the day before the EGRA assessment. As shown by the coefficient for the variable “materials available to read at home,” which was added at midline, having materials at home should increase the probability of practicing reading at home and can increase reading fluency by about 0.69 cwpm. However, only 37 percent of students reported having materials to read at home. These results highlight the importance of continuing to provide opportunities to improve access to reading materials both at home and at school.



**READING INSTRUCTION.** Midline results show that on average when teachers praise learners when they do well in class, scores improve by 0.45 cwpm relative to the scores of students whose teachers do not praise them. **Additionally, learner scores improve by an average of 0.54 cwpm when teachers say letter names and sounds** as a pedagogical strategy to help students to learn. These results are consistent with the positive results found at baseline related to teaching practices. Overall, at midline, about 83.25 percent of learners reported that their teacher says letter names and sounds while teaching, and 79.27 percent of learners said that their teacher praises them when they do well in class. Also, about 80 percent of learners said that their teacher uses many

evidenced-based practices in teaching reading, such as telling learners to look at all letters, asking learners to write new letters, reminding learners to use finger spacing while reading, and bringing objects and pictures to teach new words. These results are more or less the same at baseline and midline, which suggests that teacher pedagogies have not changed in a meaningful way since baseline.



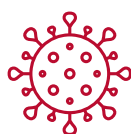
**SCHOOL RESOURCES.** At midline, having a school library was found to significantly increase the ORF scores of learners by 1.14 cwpm relative to learner scores in schools without a library. The positive impact of having a library at school is consistent with baseline findings. At baseline only 14 percent of schools had a library. At midline, the percent of schools with libraries had increased to 30, and one

third of schools that reported having a library also reported that learners use the library. Whereas 34 percent of government-run primary schools had a library, only 17 percent of community schools had libraries.

This report also explores other variables that influence reading performance that were not considered at baseline but help to have a more comprehensive understanding of other relevant predictors of ORF. These variables are described next.



**ABSENTEEISM.** Students who miss classes read approximately 0.5 less cwpm than those who do not. Results from the learner questionnaire show that 40 percent of students missed at least one day of school in the past week. While a 0.5 coefficient is not high and there are other individual variables that have a higher coefficients, it represents about 13 percent of the average 3.88 cwpm average ORF score.



**LEARNING DURING COVID.** Learners that reported receiving any kind of lesson during COVID improved their ORF score by 0.8 cwpm, keeping everything else constant. Only 27 percent of students reported receiving any kind of lesson while schools were closed—actual figures may in fact be higher than those reported by students. There are several important factors to consider on this topic.

First, 71 percent of learners who reported that they received some form of school-related work during school closures said that they did not have teacher support to review lessons, while 87 percent reported that they received support through their parents. Second, 26 percent of those that did not receive support from their parents also reported that their mothers do not know how to read. Lastly, most teachers—63 percent—also mentioned that they did not receive any professional development to adapt to changes produced by the COVID-19 pandemic. In this sense, even though the pandemic is no longer in an emergency phase, teachers still need adequate training to integrate pedagogical approaches to effectively support their learners in the future.



**SOCIOECONOMIC CHARACTERISTICS.** As mentioned above, USAID Education Data Activity constructed an index of socioeconomic characteristics; the index scale ranges from zero to eight, and includes such factors as access to a computer, radio, TV, or telephone at home; the quality of water at home; whether the home has electricity; the quality of the toilet at home; and the materials used by the household to cook. All

these characteristics were aggregated into a single index that equates a higher index value when a learner's family has better socioeconomic conditions. The coefficient of the index is 0.18, which means that with each one-point increase in the socioeconomic characteristics of their family, learners increase their reading fluency by 0.18 cwpm, keeping everything else constant. Learners who have all the conditions included in the index (8 points) obtain up to 1.4 more cwpm than learners from more vulnerable or poorer families.



**GRZ SCHOOL.** Learners from GRZ schools achieved 0.37 more cwpm than learners from community schools, keeping everything else constant. When looking at school type, the overall results of this midline assessment show that students from GRZ schools perform significantly better than students from community schools.

This is likely due to the nature of community schools, which have limited teaching and learning materials. Many also have a greater number of untrained teachers compared to GRZ schools. Resources need to be devoted to community schools, which require more support from the MoE to help close the gaps in performance between GRZ and community schools



**TEACHER HAS ACCESS TO USAID LET'S READ PROJECT RESOURCES.**

**Learners whose teachers reported having access to materials provided by USAID Let's Read Project achieved slightly over one cwpm more than those whose teachers don't have access to Let's Read materials.** This factor has the

second highest coefficient in the teacher characteristics category, only behind teachers' frequent use of the Lol in the classroom, which has a 1.2 coefficient. Almost 90 percent of teachers reported having access to materials provided by the USAID Let's Read project and as made clear by these results, these materials are proving to be very useful. Thus, it is important to not only ensure that schools have access to teaching and learning materials, but that teachers also have access to said items. It is also important that teachers receive adequate training on how to use these materials effectively in the classroom.



**TEACHER LOI DIFFERENT FROM MOTHER TONGUE.** Learners whose teachers teach in a language of instruction that is different from their mother tongue score on average 0.37 fewer cwpm than learners whose teachers provide instruction in their mother tongue. As reported in Section 3.1.2., at midline, results

from the teacher questionnaire show that 26 percent of teachers, that is, about one in four teachers, teach in a language that is not their mother tongue. Additionally, 30 percent of teachers (almost one in three) reported not being comfortable at all, or just somewhat comfortable in their language of instruction. Learners whose teachers teach in a language of instruction different from their mother tongue score on average 0.35 fewer cwpm than learners whose teachers provide instruction in their mother tongue.

The next section discusses the results presented in Section 3 and the last section provides education policy recommendations.

## IV. DISCUSSION

This section attempts to interpret the results discussed in the preceding section. It focuses on the effects of COVID-19 on the implementation of the USAID Let's Read Project and on the broader education system. It also examines how various stakeholders, particularly the MoE responded to the pandemic as well as how the teaching and learning process, and subsequently learner performance were impacted by the pandemic.

**IMPACT OF COVID-19 ON USAID LET'S READ PROJECT IMPLEMENTATION.** While this report is not intended to track the performance and progress of the USAID Let's Read Project, it is clear that the COVID-19 pandemic has affected Let's Read implementation and the education sector as a whole, ultimately having a negative impact on learning outcomes. As reported by the USAID Let's Read Project, the project was designed to support a better understanding of needs and tailored responses at each level of the education system through such activities as synchronized production and training (with major training events every project quarter); iterative annual content enhancement; tailored, just-right coaching; and community support including public-private partnerships, all driven by data from the activity's performance tracking system. The COVID-19 pandemic affected the Let's Read's capacity to effectively meet the assumptions made at the start of the project. With the onset of the pandemic at the beginning of the 2020 academic school year, which resulted in schools closing from March to September 2020, the project's envisioned face-to-face activities were significantly curtailed resulting in a pivot toward virtual engagement until in-person activities could resume. In addition to training activities being halted, other COVID-19 knock-on effects included delays in the procurement, printing, and/or delivery of teaching and learning materials and tablets, as well as delays in travel for short-term technical assistance (STTA) and trainings planned by the project. The delays on the project potentially impacted the most important beneficiaries: the learners.

**IMPACT OF COVID-19 ON THE EDUCATION SYSTEM.** The COVID-19 pandemic has affected people with little regard to nationality, level of education, income, or gender. But the same cannot be said regarding the consequences of the pandemic, which have hit the most vulnerable and at risk the hardest, including in the education sector. Students from privileged backgrounds who are supported by their parents and who are eager and able to learn were more easily able to find their way past closed school doors to alternative learning opportunities. However, those from disadvantaged backgrounds were more likely to be unable to access learning opportunities following the closure of their schools.

**SCHOOL CLOSURES.** Prior to the closure of schools due to the COVID-19 pandemic in 2020, the Zambian school calendar experienced a slow start due to the gassing situation that occurred in January and February 2020.<sup>10</sup> Furthermore, interruptions caused by a heavy rainy season affected some schools and classes. By the time schools closed in March, students had already lost learning time. Data from UNESCO's Dashboards on the Global Monitoring of School Closures Caused by the COVID-19 Pandemic (2022) shows that as of March 31, 2022, schools were fully closed for 15 weeks, and partially open for 13 weeks, which accounts for about seven months of interrupted classes between school years 2020 and 2021. Starting in September 2020, most schools implemented a COVID timetable, which provided for less than 50 percent of instructional time and learning areas than the pre-pandemic timetable. At the time of preparing this report, some schools were still implementing COVID timetables and had not gone back to a regular schedule. Therefore, learners continue to experience limited learning contact time. In addition to the cumulative impact that the repetitive closing and opening of schools has on reading outcomes, teachers and learners need time to re-adjust to school, routines, and lessons in progress following these constant disruptions. At midline, 63 percent of teachers also mentioned that

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<sup>10</sup> There were chemical gassing attacks that occurred across the country at the beginning of the 2020 school year. This resulted in high absenteeism and, in some instances, school closures.

they did not receive any professional development to adapt to changes caused by the COVID-19 pandemic.

**LACK OF ACCESS TO REMOTE LEARNING.** This crisis has exposed the many inadequacies and inequities that exist in the education system—from access to broadband internet and computers needed for online education, to the supportive environments needed to be able to focus on learning, as well as to the misalignment between resources and needs (Schleicher, 2020). In the case of Zambia, data collected through the student questionnaire shows that most participants could indeed be considered vulnerable. For example, 71 percent of learners assessed at midline reported that they did not have electricity at home. Accordingly, 71 percent of learners also mentioned that they did not have a television at home, 43 percent did not have a radio, and 94 percent did not have a computer. Lack of access to these resources has certainly impacted their ability to access education during school closures. At midline, only 27 percent of students reported receiving any kind of school lesson while schools were closed. Of the learners who reported that they did receive some form of schooling during school closures, 71 percent reported that they did not have teacher support to review lessons. While remote learning provided a vehicle for learners to continue learning during school closures, a great deal is still unknown about the effectiveness of this mode of learning, understanding that a gadget (computer, mobile phone, tablet etc.) cannot replace a classroom and the array of benefits that come with face-to-face interactions with teachers and other learners.

**MOE RESPONSE TO THE PANDEMIC.** After schools closed in March 2020 due to the COVID-19 pandemic, the MoE decided to reopen schools for examination classes in June 2020. To mitigate the potential spread of COVID-19 amongst learners, the MoE, in collaboration with partners, established COVID-19 guidelines for schools. Aside from these guidelines, the MoE and various partners also developed several interventions to help ensure that students continued to learn while schools were closed. The Alternative Modes of Education Provision (AMEP) involved the implementation of remote learning using various platforms, such as television, radio, and paper-based materials (ZANEC, 2021). As confirmed from the findings of the current study and reported in the Continuity of Learning Survey Report (ZANEC, 2021), learning content remained inaccessible to children from rural areas and poor economic backgrounds with no access to laptops, computers, smartphones, electricity, internet, televisions, and radios. Power outages also limited the effectiveness of the remote learning interventions. By recommending the use of technology to support remote learning, the AMEP made evident the digital divide that exists in the country between families of high and low socioeconomic status. ZANEC (2021) highlights that the early grade primary schools did not benefit much from remote learning interventions because children aged 0 to 8 years old could not access remote learning programs and tools.

**TEACHER PREPAREDNESS.** After schools opened and students returned following six months of absence, teachers were expected to pick up where they left off before school closures, with no support on where or how to begin. A study conducted by UNESCO in Sub-Saharan Africa, including Zambia, uncovered that when schools re-opened, many teachers reported that they focused on revisiting content they had previously taught or revisiting specific topics they thought had been challenging for learners as they were not able to simply continue where they left off before school closures (UNESCO, 2022). Data collected from 800 teachers, found that in 2020, only 20.7 percent of teachers reported being able to accomplish everything outlined in their syllabus (ZANEC, 2021). Put otherwise, four out of five teachers were not able to complete the teaching content planned for the school year. Most teachers (66 percent) indicated that they gave homework to children, 33 percent taught remotely using online platforms, and about 19 percent said that they provided remedial teaching (ZANEC, 2021). When asked about the difficulties in conducting catch up/remedial education, 73 percent of head teachers cited limited time, lack of access to learning spaces, and inadequate teaching staff as their main limitations. With the majority of teachers surveyed—73 percent—citing conducting catch up or remedial lessons as a major challenge they were facing, it is clear that mitigating the loss of learning resulting from the closure of schools remains a big challenge (ZANEC, 2021).

Given the global context in 2020 and 2021 shaped by the highly disruptive COVID-19 pandemic, the Midline EGRA's finding that the percentage of students who do not reach the minimum reading level has increased by approximately four percentage points—from 92 percent in 2018 to 96 percent in 2021—is unsurprising (refer to Section 3.3. of this report). This result is consistent with World Bank projections, which estimate that, on average, under a positive scenario where schools were closed for seven months, learning poverty would increase by at least 3.5 percent globally, and 6.4 percent for Sub-Saharan Africa (World Bank, 2021).<sup>11</sup> With this in mind, this discussion section highlights the shock experienced by the Zambian education system as a result of the COVID-19 pandemic as the main driver of the decrease in reading performance.

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<sup>11</sup> Learning poverty means being unable to read and understand a simple text by age 10. By definition, this indicator could be used as a proxy for non-readers, with the main difference being that non-readers are not limited to 10 year old students (24 percent of the midline sample are learners aged 11 years old or more).



## V. CONCLUSIONS AND RECOMMENDATIONS

### 5.1. CONCLUSIONS

**There has been a decrease in learners' performance in initial reading skills and higher-level reading skills from baseline to midline, while pre-reading skills have remained unchanged.**

In terms of initial reading skills, performance has decreased across all three subtasks assessed, evidenced by lower average midline scores as compared to baseline scores for letter sound recognition, syllable sound recognition, and non-word reading. Reduced performance in initial reading skills has led to reduced performance in higher-level reading skills, which is evidenced by decreases from baseline to midline in average scores for ORF and reading comprehension. All differences between baseline and midline average scores are statistically significant, though there is variability in the scale of change for reading fluency and comprehension reductions across all languages. Performance in pre-reading skills remained unchanged as evidenced by average listening comprehension scores.

**At midline, learners attending government-run schools performed better than learners from community-run schools in all EGRA subtasks.** The USAID Education Data Activity found that differences in average scores for all initial reading and higher-level skills sub-tasks were statistically significant. At midline, there were wide gaps in performance by school type, which varied in size depending on the EGRA subtask. Learners coming from GRZ schools had an average score in letter sound identification a little over 80 percent higher than students from community-run schools—the difference between school types was 30 percent at baseline. Learners from GRZ schools performed about 10.2 percent better than students from community schools in reading comprehension—the difference between school types was 27 percent at baseline. Considering all tasks, the gap in reading performance between learners from GRZ schools and community schools has decreased from baseline to midline.

**At midline, girls had higher average scores than boys in all EGRA sub-tasks except for listening comprehension.** However, only the average score differences for listening comprehension and letter sound identification are statistically significant, meaning that, particularly for the initial and higher-level reading skills, girls and boys are performing at basically the same level. Both, girls and boys, experienced a 30 percent reduction in ORF from baseline to midline.

**According to MoE benchmarks, most Grade 2 learners were unable to read fluently and comprehend grade level text at the end of Grade 2.** At baseline, about 8 percent of students reached the minimum level reading proficiency. At midline, the share of students reaching minimum level reading proficiency decreased to 4 percent. Given the overall reduction in reading performance in initial and higher-level skills, there has also been a reduction in the percentage of learners reaching the minimum level reading proficiency benchmark set by the MoE. No student reached the proficient reader (or fluent reader) benchmark. This reduction is consistent for all languages of instruction, all of which show decreases in the percentage of learners achieving the MoE benchmarks at midline. Overall, less than 1 in 20 students is reading at the minimum proficiency level.

**Factors associated with ORF include reading to others at home, reading a book at school, and reading at home.** Learners who frequently read to others at home increase their reading fluency by around 2.7 cwpm. Similarly, learners who reported practicing reading at school the day prior to the EGRA assessment read about 2.9 cwpm more than learners who didn't. These factors are closely linked to having materials available to read at home and at school. This evidences the need to continue improving access to high quality reading materials both at home and at school, and the need to sensitize both teachers and parents to support young learners to practice reading. Additionally, teacher pedagogies also have a strong influence on ORF. Midline results show that on average, when teachers praise learners when they do well in class, scores improve by 0.45 cwpm relative to the scores of



students whose teachers do not praise them. Furthermore, learner scores improve by an average of 0.54 cwpmm when teachers say letter names and sounds. However, no changes were perceived in teacher pedagogies from baseline to midline.

## 5.2. RECOMMENDATIONS

Midline EGRA findings indicate that reading performance has decreased since the baseline assessment conducted in 2018. Therefore, recommendations from the baseline report are still relevant to improve early grade reading skills among primary learners in Zambia. Additionally, even though this is not an assessment of the impacts of the COVID-19 pandemic on the education sector, the USAID Education Data Activity recommends that in addition to the midline findings, education sector stakeholders should consider lessons learned from the pandemic in the design of long-term education strategies. It is important to note that some of the recommendations included in this section go beyond the scope of this study's research questions to consider policy recommendations that relate to free education and the massive recruitment of teachers. With this in mind, the assessment team recommends the following:

### **Develop a comprehensive approach to teaching and monitoring foundational reading skills.**

USAID Education Data Activity suggested this recommendation in the baseline report, it is still relevant at midline. Policymakers and practitioners should focus on supporting learners to develop these fundamental skills for a strong foundation in ORF.

**Provide explicit training on how to teach reading skills, implement regular assessments to screen and identify underperforming learners, and implement evidence-based individualized or intensive reading interventions.** While global evidence suggests that teacher trainings and a strong performance screening and monitoring system are necessary to prepare successful readers, many teachers in developing countries do not receive comprehensive training that focuses on teaching, assessing, and implementing reading interventions (Kim et al. 2016). At midline, one third of teachers (35 percent) reported that they had participated in an in-service training for early grade reading in the last year, and the same percent had received a coaching visit in the last year. Therefore, relevant stakeholders in education, including the MoE, should train teachers on how to provide explicit instruction covering the five reading skills: phonics, phonemic awareness, vocabulary, fluency, and comprehension; this can be done through in-service continuous professional development and pre-service training in teacher training institutions. In this regard, the MoE officials trained by the USAID Let's Read District Reading teams should continue to provide support to teachers to encourage them to implement these skills in the classroom as well as monitor and evaluate their performance on a regular basis.

**The GRZ should revamp its performance tracking system to continuously monitor and identify schools and teachers that require individualized or intensive interventions to improve reading.** Training teachers needs to be complemented with a system adjustment to continually screen and identify learners that need remedial instruction. Once learners are identified, a response to intervention programs needs to take place in which schools and local education stakeholders are notified of the cases that need additional support and remedial instruction programs. The GRZ should consider evidence-based individualized interventions, such as multiple and extended instructional sessions, extensive reading practice with one-on-one instruction, small reading groups, etc. (Wanzek, Otaiba, & Gatlin, 2016). The MoE should continuously monitor learner performance through the performance tracking system to identify schools and teachers that require individualized or intensive interventions to improve reading. MoE should work closely with the USAID Let's Read Project to determine how the MoE can enhance its performance tracking system.

**Encourage teachers, parents, and household members to support learners to practice reading at school and at home.** Similar to baseline findings, this midline study found that reading fluency scores improve when learners practice reading at school or at home. This finding suggests the

need to strengthen the relationship between the home and school environment; to continue to improve access to reading materials; and to create opportunities for community level programs to support children's exposure to reading at home by encouraging parents and guardians to read to their children on a regular basis and vice-versa.

Examples of interventions and past projects that can be used to encourage learners to practice reading inside and outside the home include:

- **Parental involvement-** This was central to the USAID-funded Read to Succeed Activity, which sought to improve parental and community involvement in schools and provide support to learners (RTI International 2015).
- **Reading fairs** can be held to promote positive behavior among parents related to reading with children as made evident by Save the Children's effective Literacy Boost project, which included reading fairs and other activities to support parents reading with their children (Save the Children 2012).
- **After-school reading clinics-** Results from the Literacy Boost project in both Pakistan and Malawi suggest that after-school reading clinics staffed by community and youth volunteers as mentors help ensure that learners are read to more regularly and practice reading outside the classroom.
- **Youth literacy volunteers-** One of the activities scheduled by the USAID Let's Read project is to engage the community on how best to support learners in literacy development at home through youth literacy volunteers. However, at the time of data collection for this Midline EGRA Study, the project was yet to commence this activity. Through interactions with Parent Teacher Associations and existing community structures, such as churches and other social structures, stakeholders can encourage communities to engage in reading activities with learners through the reading clinics model mentioned above.
- **Community libraries-** The government should consider the re-introduction of community libraries that contain age-appropriate reading materials for early grade learners.
- **Printed and writing materials-** At household level, parents should be encouraged to make various printed materials and writing materials available that learners can interact with at home. Parents should set time aside for shared reading activities with children in the home. While the literacy environment at home is important to promote reading, parental responsiveness and values that promote reading are equally important in promoting basic reading skills.

**Improve access to adequate and appropriate reading materials and increase their use at school.** In partnership with the MoE, the USAID Let's Read Project is developing and providing reading packages and teaching and learning materials for ECE to Grade 3 learners. These materials include those previously developed by the MoE (core and supplementary), as well as materials newly developed by the project. The project is working to develop both hard copy and digital versions of the materials for distribution across all the schools in the five project provinces. These textbooks and appropriate reading materials should be made more readily available for children to read at school and schools should make provisions for learners to read these books at home. In addition, there is a need to understand whether teachers are implementing USAID Let's Read Project lessons from the literacy instructional model; the level of distribution of the supplementary reading material; and whether learners are accessing and reading the books in class and can also read the books at home. Moreover, the Global Book Alliance (2021) highlights the need to ensure that the MoE has accurate information on current enrollments and projected enrollment figures across the seven Lols. This will enable government to connect this information to budgeting and procurement processes to ensure that it works with cooperating partners and publishers (public and private) to consistently produce an adequate number of context relevant, leveled, and exciting reading materials for early grade learners, in each of the Lols. Government should work with printers to ensure timely delivery of printed books and subsequent distribution of these

books to schools. Schools must ensure that learners can easily access these reading books at school libraries and reading areas within classrooms.

**Ensure schools have libraries that are accessible to learners, reading clubs, and spaces where learners can engage in literacy activities.** In all of these proposed interventions, the MoE, as the major stakeholder and custodian of the education system in Zambia, must take center stage in pioneering their implementation. Since reading scores tend to improve when learners have materials to practice reading at school and at home, the MoE should ensure that each school has a functioning library.

**Develop language-specific benchmarks to account for inherent differences among Lols.** The MoE benchmarks developed in 2014 apply uniformly across all seven GRZ-designated Lols and were used by the USAID Let's Read Project to set its targets. However, inherent structural differences between languages cause learner reading scores to differ by language. Therefore, benchmarks should vary by language. While an overall target across languages could be used, setting benchmarks by language will help account for inherent language differences and facilitate better monitoring of changes over time. Furthermore, there is a need to align the competencies and assessments in the primary literacy curriculum for all the grade levels and the EGRA assessments in the seven languages of instruction to the Global Proficiency Framework (GPF). Through policy linking, the MoE can link different student assessments to the GPF, which provides global minimum proficiency levels—below partially meets, partially meets, meets, and exceeds global minimum proficiency—in reading and mathematics for learners from Grades 1 to 9. Policy linking includes the following processes: a) align curriculum content and assessments to the GPF through standardized procedures; b) match each of the assessment items with the appropriate levels and descriptors of the GPF; and c) set global benchmarks for Zambia using standardized procedures.

These benchmarks are important because they will enable Zambia to provide country-level assessment data for reading indicators that will feed into global student learning outcomes like UN Sustainable Development Goal (SDG) 4.1: By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. This will enable the country to gauge its performance in relation to local and international standards toward the attainment of this SDG. The MoE should lead this process with support from education stakeholders.

**The Ministry of Education should increase support to community schools.** Results from the Baseline and Midline EGRAs highlight that learners from community schools consistently perform at lower levels than learners from government schools, and there is a statistically significant higher percent of non-readers in community schools than government schools. Government support to community schools has increased in recent years, but still remains uneven and inadequate, often due to confusion around national policy (USAID, 2016). While community schools report receiving increasing amounts of support from the government, resource allocations to community schools are largely driven by the “goodwill” of district education offices rather than the relative needs of a school or by a national policy. Similarly, the arrival of government teachers at community schools often creates role confusion for the Parents and Community School Committees, volunteer teachers, and even government teachers themselves. Community schools often do not receive adequate material and human resource support from the MoE. Thus, the MoE should assign increased funding and resources to community schools, both in terms of teacher training, teacher allocations, as well as infrastructure and materials.

Given the impact of the COVID-19 pandemic on the education sector and adding to the government's current COVID-19 strategy, the MoE could consider the following five components to ensure that all students, particularly the most vulnerable, have access to a robust, high-quality education in the medium-to long-run.

1. **Learning recovery:** There is a need to develop a remedial learning policy that will enforce and accelerate current remedial interventions in schools that aim to help learners catch up on lost schooling time. These policies should involve supporting teachers with tools, skills, and knowledge for assessing learning loss (ZANEC, 2021). In addition, the MoE could undertake curriculum reforms intended to minimize content so as to focus on core skills, competencies, and knowledge, given the reduced learning hours in the majority of schools. The MoE should ensure that schools across the country implement the Teaching at the Right Level approach as well as targeted education interventions to help learners recover some of the learning loss. This will require investment in in-service training for teachers.
2. **Maintaining student retention in schools:** The government should strengthen systems at all levels (school, zone, district, and provincial) that feed into the Education Management Information Systems (EMIS) to better monitor learner retention. In the short term, the government should improve information uptake from the schools on learner enrollment; performance (based on formative and summative assessments); and dropouts (number, nature, and causes) in schools across the country. An understanding of factors that precipitate school dropouts will help the government provide the appropriate interventions at the school and national level to mitigate this issue. This requires minimal resources. It also requires greater precision during data collection and recording on the part of ministry officials. Furthermore, actions such as re-introducing campaigns on the re-entry policy and strengthening school feeding programs could encourage learners to return to school (ZANEC, 2021).<sup>12</sup> The latest policy announcement by the government on free education could serve as a motivating factor for families to ensure that learners that drop-out return to school.<sup>13</sup> However, the government should enhance monitoring and evaluation mechanisms that will track and help ensure that the quality of education children receive is not compromised by increased enrolment and that all the resources (human, financial, infrastructural, and material) are proportionate to the likely increase in enrollment due to the policy.
3. **Hybrid learning schemes:** The MoE should also consider measures for rebuilding the education system in the long-term, accounting for the changes that the pandemic has brought into place. As discussed by UNICEF and UNDP (2020), in response to the impact of the COVID-19 pandemic on education systems around the world, the MoE should move toward a system that ensures learning for all students, regardless of their place of birth or residence. Long-term adjustments should consider at least three core elements: 1) closing the digital divide by expanding the electricity grid to rural areas that currently do not have electricity; 2) working with internet and mobile service providers to increase access to the internet; and 3) providing cost efficient electronic gadgets (computers, phones, tablets, laptops, etc.) for use in classrooms and homes. The government could also consider promoting community-based internet access points in collaboration with service providers.
4. **Teacher training:** The government, in collaboration with teacher training colleges, must focus teacher training on pedagogical practices that foster autonomy, motivation, and students' ability to learn how to learn. Additionally, teachers require additional training to develop the necessary technological skills to implement hybrid education models. Education authorities must work with teachers to ensure the correct use of information and communications technology to effectively engage their students and support the delivery of online and distance education. As the government

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<sup>12</sup> The re-entry policy was established in 1997 by the GRZ to facilitate advancement of girls' education. It requires schools to grant girls maternity leave and then re-admit them after giving birth.

<sup>13</sup> 2022 budget address by Honourable Dr. Situmbeko Musokotwane, MP, Minister of Finance and National Planning delivered to the National Assembly on Friday, October 29, 2021.

embarks on the recruitment of 30,000 teachers, there is a need to consider the training requirements of these teachers considering the lessons derived from the COVID-19 pandemic and the need for additional training on the use of ICT.

5. **Support for families:** The government should develop strategies on how to better engage and work with parents and guardians to impart practices that support literacy in the home environment. Similar to the recommendation included above on strengthening teacher skills and knowledge in using technology for teaching and learning, there is an equal need for families to receive knowledge and support on how they can better support their children with remote lessons. The free education policy pronouncement by the government will certainly ease the financial burden of taking children to school. The government's consistent provision of personal protective equipment, such as masks and hand sanitizers, at school will also help families (ZANEC, 2021).

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## ANNEXES

### ANNEX I. SUMMARY STATISTICS OF EGRA SUBTASKS BY LANGUAGE

#### Average EGRA scores by language and subtasks

Chitonga Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	5944	2.358	2.535	0.2	0.05	184
Letter sound identification	5944	6.415	7.479	1.1	0.31	184
Syllable sound identification	5944	8.674	7.764	-0.9	0.43	184
Non-word reading	5944	3.885	3.341	-0.5	0.34	184
Oral reading	5944	4.376	3.350	-1.0	0.16	184
Reading comprehension	5944	0.468	0.393	-0.1	0.40	184
English vocabulary	5944	8.592	8.820	0.2	0.60	184
English listening comprehension	5944	1.102	1.079	0.0	0.86	184

Cinyanja Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	5698	1.724	1.877	0.2	0.24	217
Letter sound identification	5698	6.712	6.290	-0.4	0.71	217
Syllable sound identification	5698	10.088	8.399	-1.7	0.29	217
Non-word reading	5698	3.827	2.920	-0.9	0.17	217
Oral reading	5698	6.622	4.684	-1.9	0.09	217
Reading comprehension	5698	0.475	0.344	-0.1	0.10	217
English vocabulary	5698	7.455	7.260	-0.2	0.45	217
English listening comprehension	5698	0.740	0.867	0.1	0.04	217

Icibemba Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	3255	2.014	2.091	0.1	0.43	139
Letter sound identification	3255	8.085	8.747	0.7	0.53	139
Syllable sound identification	3255	9.574	8.851	-0.7	0.69	139
Non-word reading	3255	6.415	5.794	-0.6	0.66	139
Oral reading	3255	5.324	4.610	-0.7	0.57	139
Reading comprehension	3255	0.599	0.627	0.0	0.84	139
English vocabulary	3255	6.692	7.079	0.4	0.10	139
English listening comprehension	3255	0.641	0.604	0.0	0.72	139

Kiikaonde Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	3234	2.909	2.578	-0.3	0.02	127
Letter sound identification	3234	6.134	5.448	-0.7	0.40	127
Syllable sound identification	3234	8.478	5.631	-2.8	0.01	127
Non-word reading	3234	2.921	1.899	-1.0	0.03	127
Oral reading	3125	3.917	2.263	-1.7	0.01	127
Reading comprehension	3125	0.420	0.228	-0.2	0.01	127
English vocabulary	3234	9.645	8.757	-0.9	0.09	127
English listening comprehension	3234	1.499	1.111	-0.4	0.01	127

Lunda Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	3060	2.354	2.522	0.2	0.29	129
Letter sound identification	3060	5.614	6.225	0.6	0.64	129
Syllable sound identification	3060	7.423	5.674	-1.7	0.28	129
Non-word reading	3060	4.681	3.844	-0.8	0.45	129
Oral reading	3060	5.081	3.535	-1.5	0.16	129
Reading comprehension	3060	0.569	0.411	-0.2	0.24	129
English vocabulary	3060	7.439	7.630	0.2	0.58	129
English listening comprehension	3060	0.666	0.692	0.0	0.79	129

Luvale Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2708	2.245	2.312	0.1	0.53	133
Letter sound identification	2708	5.112	4.711	-0.4	0.59	133
Syllable sound identification	2708	14.184	6.939	-7.2	0.00	133
Non-word reading	2708	5.166	2.364	-2.8	0.00	133
Oral reading	2708	7.506	3.437	-4.1	0.00	133
Reading comprehension	2708	0.656	0.338	-0.3	0.00	133
English vocabulary	2708	7.684	7.478	-0.2	0.47	133
English listening comprehension	2708	0.926	0.867	-0.1	0.59	133

Silozi Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	6129	2.114	1.892	-0.2	0.13	233
Letter sound identification	6129	7.541	5.960	-1.6	0.09	233
Syllable sound identification	6129	13.988	8.554	-5.4	0.00	233
Non-word reading	6127	5.366	3.156	-2.2	0.00	233
Oral reading	6129	7.654	4.308	-3.3	0.00	233
Reading comprehension	6129	0.776	0.604	-0.2	0.02	233
English vocabulary	6129	8.108	7.095	-1.0	0.00	233
English listening comprehension	6129	0.659	0.756	0.1	0.25	233

## Average zero scores by EGRA subtask

Chitonga Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test		
					Diff.	P-Value	df
Listening comprehension	5944	9%	7%	-2%	-2% pts	0.27	184
Letter sound identification	5944	47%	33%	-14%	-14% pts	0.00	184
Syllable sound identification	5944	55%	53%	-2%	-2% pts	0.58	184
Non-word reading	5944	68%	68%	0%	0% pts	0.98	184
Oral reading	5944	74%	75%	1%	1% pts	0.82	184
Reading comprehension	5944	77%	76%	-1%	-1% pts	0.84	184
English vocabulary	5944	0%	0%	0%	0% pts	0.77	184
English listening comprehension	5944	36%	38%	2%	2% pts	0.55	184

Cinyanja Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test		
					Diff.	P-Value	df
Listening comprehension	5698	25%	22%	-3%	-3% pts	0.45	217
Letter sound identification	5698	38%	46%	8%	8% pts	0.17	217
Syllable sound identification	5698	54%	56%	2%	2% pts	0.70	217
Non-word reading	5698	70%	73%	3%	3% pts	0.56	217
Oral reading	5698	61%	68%	7%	7% pts	0.22	217
Reading comprehension	5698	76%	79%	4%	4% pts	0.32	217
English vocabulary	5698	0%	0%	0%	0% pts	0.92	217
English listening comprehension	5698	49%	43%	-6%	-6% pts	0.13	217

Icibemba Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test		
					Diff.	P-Value	df
Listening comprehension	3255	13%	12%	-2%	-2% pts	0.47	139
Letter sound identification	3255	31%	26%	-5%	-5% pts	0.28	139
Syllable sound identification	3255	49%	40%	-9%	-9% pts	0.17	139
Non-word reading	3255	61%	58%	-3%	-3% pts	0.68	139
Oral reading	3255	63%	63%	0%	0% pts	0.96	139
Reading comprehension	3255	73%	70%	-3%	-3% pts	0.66	139
English vocabulary	3255	0%	0%	0%	0% pts	0.94	139
English listening comprehension	3255	57%	61%	4%	4% pts	0.40	139

Kiikaonde Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test		
					Diff.	P-Value	df
Listening comprehension	3234	11%	14%	3%	3% pts	0.25	127
Letter sound identification	3234	49%	43%	-6%	-6% pts	0.13	127
Syllable sound identification	3234	53%	57%	4%	4% pts	0.32	127
Non-word reading	3234	71%	77%	6%	6% pts	0.12	127
Oral reading	3125	75%	80%	5%	5% pts	0.17	127
Reading comprehension	3125	82%	88%	7%	7% pts	0.02	127
English vocabulary	3234	0%	0%	0%	0% pts	0.00	127
English listening comprehension	3234	24%	44%	20%	20% pts	0.00	127

Lunda Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test		
					Diff.	P-Value	df
Listening comprehension	3060	10%	10%	0%	0% pts	0.93	129
Letter sound identification	3060	41%	41%	0%	0% pts	0.98	129
Syllable sound identification	3060	60%	64%	4%	4% pts	0.57	129
Non-word reading	3060	64%	67%	3%	3% pts	0.62	129
Oral reading	3060	64%	69%	5%	5% pts	0.43	129
Reading comprehension	3060	73%	80%	7%	7% pts	0.23	129
English vocabulary	3060	0%	0%	0%	0% pts	0.37	129
English listening comprehension	3060	59%	56%	-3%	-3% pts	0.50	129

Luvale Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test		
					Diff.	P-Value	df
Listening comprehension	2708	8%	7%	-1%	-1% pts	0.37	133
Letter sound identification	2708	41%	39%	-2%	-2% pts	0.64	133
Syllable sound identification	2708	33%	46%	12%	12% pts	0.01	133
Non-word reading	2708	59%	78%	18%	18% pts	0.00	133
Oral reading	2708	56%	73%	17%	17% pts	0.00	133
Reading comprehension	2708	68%	83%	15%	15% pts	0.00	133
English vocabulary	2708	0%	0%	0%	0% pts	0.24	133
English listening comprehension	2708	43%	42%	-1%	-1% pts	0.83	133

Silozi Subtask	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test		
					Diff.	P-Value	df
Listening comprehension	6129	18%	23%	5%	5% pts	0.20	233
Letter sound identification	6129	30%	32%	3%	3% pts	0.46	233
Syllable sound identification	6129	36%	49%	12%	12% pts	0.00	233
Non-word reading	6127	56%	68%	12%	12% pts	0.00	233
Oral reading	6129	53%	61%	8%	8% pts	0.04	233
Reading comprehension	6129	50%	54%	3%	3% pts	0.42	233
English vocabulary	6129	0%	0%	0%	0% pts	0.47	233
English listening comprehension	6129	54%	48%	-6%	-6% pts	0.15	233

## Average scores by gender – girls

Cinyanja Subtask Girls	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2948	1.539	1.637	0.1	0.57	216
Letter sound identification	2948	6.825	6.975	0.2	0.91	216
Syllable sound identification	2948	10.212	8.852	-1.4	0.43	216
Non-word reading	2948	3.687	3.129	-0.6	0.43	216
Oral reading	2948	6.681	5.017	-1.7	0.17	216
Reading comprehension	2948	0.467	0.337	-0.1	0.17	216
English vocabulary	2948	7.388	7.366	0.0	0.95	216
English listening comprehension	2948	0.702	0.911	0.2	0.00	216

Chitonga Subtask Girls	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2998	2.248	2.461	0.2	0.06	184
Letter sound identification	2998	7.122	8.313	1.2	0.29	184
Syllable sound identification	2998	9.575	8.936	-0.6	0.62	184
Non-word reading	2998	4.277	3.882	-0.4	0.55	184
Oral reading	2998	4.970	3.959	-1.0	0.26	184
Reading comprehension	2998	0.528	0.442	-0.1	0.41	184
English vocabulary	2998	8.661	8.863	0.2	0.66	184
English listening comprehension	2998	1.129	1.094	0.0	0.81	184

Icibemba Subtask Girls	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1651	1.995	1.922	-0.1	0.59	138
Letter sound identification	1651	8.257	8.700	0.4	0.70	138
Syllable sound identification	1651	10.252	8.550	-1.7	0.41	138
Non-word reading	1651	6.854	5.500	-1.4	0.42	138
Oral reading	1651	5.722	4.207	-1.5	0.31	138
Reading comprehension	1651	0.673	0.576	-0.1	0.58	138
English vocabulary	1651	6.597	7.100	0.5	0.09	138
English listening comprehension	1651	0.711	0.593	-0.1	0.34	138



Kiikaonde Subtask Girls	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1599	2.836	2.399	-0.4	0.01	127
Letter sound identification	1599	6.138	5.750	-0.4	0.70	127
Syllable sound identification	1599	8.179	6.048	-2.1	0.11	127
Non-word reading	1599	2.833	2.029	-0.8	0.15	127
Oral reading	1547	3.732	2.596	-1.1	0.11	127
Reading comprehension	1547	0.387	0.246	-0.1	0.04	127
English vocabulary	1599	9.536	8.976	-0.6	0.24	127
English listening comprehension	1599	1.495	1.263	-0.2	0.11	127

Lunda Subtask Girls	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1530	2.114	2.286	0.2	0.35	129
Letter sound identification	1530	5.101	5.486	0.4	0.79	129
Syllable sound identification	1530	5.868	4.283	-1.6	0.30	129
Non-word reading	1530	3.736	2.775	-1.0	0.34	129
Oral reading	1530	3.974	2.528	-1.4	0.15	129
Reading comprehension	1530	0.421	0.287	-0.1	0.25	129
English vocabulary	1530	7.292	7.454	0.2	0.69	129
English listening comprehension	1530	0.631	0.601	0.0	0.76	129

Luvale Subtask Girls	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1419	2.082	2.133	0.1	0.70	133
Letter sound identification	1419	5.179	4.766	-0.4	0.63	133
Syllable sound identification	1419	14.148	6.771	-7.4	0.00	133
Non-word reading	1419	5.306	2.375	-2.9	0.00	133
Oral reading	1419	7.415	3.467	-3.9	0.00	133
Reading comprehension	1419	0.661	0.345	-0.3	0.01	133
English vocabulary	1419	7.643	7.494	-0.1	0.70	133
English listening comprehension	1419	0.927	0.933	0.0	0.96	133

Silozi Subtask Girls	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	3142	2.050	1.796	-0.3	0.10	233
Letter sound identification	3142	7.942	6.514	-1.4	0.23	233
Syllable sound identification	3142	15.430	8.961	-6.5	0.00	233
Non-word reading	3141	5.945	3.237	-2.7	0.00	233
Oral reading	3142	8.629	4.546	-4.1	0.00	233
Reading comprehension	3142	0.862	0.638	-0.2	0.01	233
English vocabulary	3142	8.161	7.177	-1.0	0.00	233
English listening comprehension	3142	0.681	0.774	0.1	0.26	233

## Average scores by gender – boys

Chitonga Subtask Boys	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2946	2.475	2.611	0.1	0.15	184
Letter sound identification	2946	5.666	6.625	1.0	0.40	184
Syllable sound identification	2946	7.720	6.564	-1.2	0.34	184
Non-word reading	2946	3.469	2.786	-0.7	0.26	184
Oral reading	2946	3.746	2.726	-1.0	0.15	184
Reading comprehension	2946	0.405	0.343	-0.1	0.47	184
English vocabulary	2946	8.519	8.775	0.3	0.57	184
English listening comprehension	2946	1.074	1.063	0.0	0.94	184

Cinyanja Subtask Boys	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2750	1.922	2.110	0.2	0.17	217
Letter sound identification	2750	6.592	5.625	-1.0	0.35	217
Syllable sound identification	2750	9.956	7.960	-2.0	0.28	217
Non-word reading	2750	3.978	2.717	-1.3	0.10	217
Oral reading	2750	6.560	4.360	-2.2	0.08	217
Reading comprehension	2750	0.483	0.350	-0.1	0.20	217
English vocabulary	2750	7.527	7.158	-0.4	0.11	217
English listening comprehension	2750	0.781	0.825	0.0	0.66	217

Icibemba Subtask Boys	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1604	2.033	2.267	0.2	0.02	139
Letter sound identification	1604	7.909	8.795	0.9	0.42	139
Syllable sound identification	1604	8.878	9.166	0.3	0.87	139
Non-word reading	1604	5.965	6.101	0.1	0.92	139
Oral reading	1604	4.916	5.032	0.1	0.92	139
Reading comprehension	1604	0.522	0.680	0.2	0.22	139
English vocabulary	1604	6.790	7.057	0.3	0.24	139
English listening comprehension	1604	0.569	0.615	0.0	0.69	139

Kiikaonde Subtask Boys	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1635	2.987	2.772	-0.2	0.20	127
Letter sound identification	1635	6.131	5.119	-1.0	0.25	127
Syllable sound identification	1635	8.797	5.177	-3.6	0.01	127
Non-word reading	1635	3.016	1.758	-1.3	0.02	127
Oral reading	1578	4.115	1.902	-2.2	0.01	127
Reading comprehension	1578	0.456	0.208	-0.2	0.01	127
English vocabulary	1635	9.762	8.519	-1.2	0.05	127
English listening comprehension	1635	1.503	0.946	-0.6	0.00	127

Lunda Subtask Boys	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1530	2.606	2.756	0.2	0.45	129
Letter sound identification	1530	6.150	6.955	0.8	0.56	129
Syllable sound identification	1530	9.051	7.045	-2.0	0.30	129
Non-word reading	1530	5.670	4.898	-0.8	0.59	129
Oral reading	1530	6.239	4.528	-1.7	0.23	129
Reading comprehension	1530	0.725	0.534	-0.2	0.28	129
English vocabulary	1530	7.592	7.804	0.2	0.53	129
English listening comprehension	1530	0.702	0.781	0.1	0.59	129

Luvale Subtask Boys	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1289	2.416	2.515	0.1	0.35	133
Letter sound identification	1289	5.040	4.649	-0.4	0.58	133
Syllable sound identification	1289	14.222	7.131	-7.1	0.00	133
Non-word reading	1289	5.019	2.350	-2.7	0.00	133
Oral reading	1289	7.602	3.404	-4.2	0.00	133
Reading comprehension	1289	0.650	0.330	-0.3	0.00	133
English vocabulary	1289	7.728	7.458	-0.3	0.33	133
English listening comprehension	1289	0.924	0.791	-0.1	0.21	133

Silozi Subtask Boys	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2987	2.181	1.987	-0.2	0.20	233
Letter sound identification	2987	7.126	5.411	-1.7	0.03	233
Syllable sound identification	2987	12.497	8.150	-4.3	0.00	233
Non-word reading	2986	4.768	3.075	-1.7	0.00	233
Oral reading	2987	6.646	4.073	-2.6	0.00	233
Reading comprehension	2987	0.688	0.570	-0.1	0.08	233
English vocabulary	2987	8.053	7.013	-1.0	0.00	233
English listening comprehension	2987	0.637	0.738	0.1	0.34	233

## Average scores by school type – community schools

Chitonga Subtask Community Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1968	2.411	2.496	0.1	0.70	50
Letter sound identification	1968	5.654	5.956	0.3	0.90	50
Syllable sound identification	1968	7.062	6.920	-0.1	0.96	50
Non-word reading	1968	3.221	3.106	-0.1	0.94	50
Oral reading	1968	3.400	3.491	0.1	0.97	50
Reading comprehension	1968	0.386	0.413	0.0	0.92	50
English vocabulary	1968	8.372	8.577	0.2	0.81	50
English listening comprehension	1968	1.042	0.898	-0.1	0.54	50

Cinyanja Subtask Community Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1160	1.307	1.538	0.2	0.20	32
Letter sound identification	1160	5.205	2.889	-2.3	0.05	32
Syllable sound identification	1160	8.133	6.274	-1.9	0.61	32
Non-word reading	1160	3.152	2.237	-0.9	0.50	32
Oral reading	1160	5.522	3.877	-1.6	0.49	32
Reading comprehension	1160	0.434	0.358	-0.1	0.65	32
English vocabulary	1160	6.822	6.257	-0.6	0.24	32
English listening comprehension	1160	0.498	0.804	0.3	0.02	32

Icibemba Subtask Community Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	619	1.672	1.983	0.3	0.09	26
Letter sound identification	619	5.054	7.682	2.6	0.32	26
Syllable sound identification	619	4.377	8.451	4.1	0.38	26
Non-word reading	619	2.616	5.317	2.7	0.39	26
Oral reading	619	2.399	4.284	1.9	0.46	26
Reading comprehension	619	0.295	0.528	0.2	0.49	26
English vocabulary	619	6.546	7.097	0.6	0.46	26
English listening comprehension	619	0.463	0.436	0.0	0.90	26

Kiikaonde Subtask Community Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	379	3.013	2.431	-0.6	0.03	8
Letter sound identification	379	6.004	3.195	-2.8	0.01	8
Syllable sound identification	379	7.652	2.336	-5.3	0.02	8
Non-word reading	379	2.388	0.746	-1.6	0.03	8
Oral reading	365	2.844	0.723	-2.1	0.08	8
Reading comprehension	365	0.326	0.103	-0.2	0.07	8
English vocabulary	379	11.053	8.472	-2.6	0.00	8
English listening comprehension	379	2.000	1.407	-0.6	0.01	8

Lunda Subtask Community Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	612	2.207	2.227	0.0	0.95	23
Letter sound identification	612	4.603	2.834	-1.8	0.51	23
Syllable sound identification	612	5.775	3.030	-2.7	0.33	23
Non-word reading	612	3.795	2.206	-1.6	0.39	23
Oral reading	612	3.804	1.969	-1.8	0.37	23
Reading comprehension	612	0.419	0.184	-0.2	0.32	23
English vocabulary	612	6.972	6.891	-0.1	0.87	23
English listening comprehension	612	0.537	0.518	0.0	0.92	23

Luvale Subtask Community Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	637	2.208	2.206	0.0	0.99	30
Letter sound identification	637	4.634	4.860	0.2	0.90	30
Syllable sound identification	637	11.140	7.330	-3.8	0.26	30
Non-word reading	637	4.265	2.280	-2.0	0.19	30
Oral reading	637	6.027	3.553	-2.5	0.25	30
Reading comprehension	637	0.580	0.340	-0.2	0.29	30
English vocabulary	637	6.995	7.418	0.4	0.30	30
English listening comprehension	637	0.664	0.693	0.0	0.84	30



Silozi Subtask Community Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	1127	2.056	1.562	-0.5	0.02	38
Letter sound identification	1127	6.028	4.370	-1.7	0.28	38
Syllable sound identification	1127	11.745	7.361	-4.4	0.19	38
Non-word reading	1126	4.222	2.926	-1.3	0.30	38
Oral reading	1127	6.523	3.901	-2.6	0.20	38
Reading comprehension	1127	0.726	0.488	-0.2	0.20	38
English vocabulary	1127	7.759	6.367	-1.4	0.12	38
English listening comprehension	1127	0.560	0.472	-0.1	0.48	38

## Average mean scores by school type – GRZ school

Chitonga Subtask GRZ Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	3976	2.344	2.546	0.2	0.03	134
Letter sound identification	3976	6.607	7.893	1.3	0.26	134
Syllable sound identification	3976	9.081	7.993	-1.1	0.35	134
Non-word reading	3976	4.053	3.404	-0.6	0.26	134
Oral reading	3976	4.623	3.312	-1.3	0.07	134
Reading comprehension	3976	0.489	0.388	-0.1	0.24	134
English vocabulary	3976	8.647	8.886	0.2	0.62	134
English listening comprehension	3976	1.117	1.128	0.0	0.94	134

Cinyanja Subtask GRZ Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	4538	1.788	1.981	0.2	0.22	185
Letter sound identification	4538	6.946	7.340	0.4	0.78	185
Syllable sound identification	4538	10.391	9.055	-1.3	0.45	185
Non-word reading	4538	3.932	3.131	-0.8	0.28	185
Oral reading	4538	6.793	4.933	-1.9	0.13	185
Reading comprehension	4538	0.481	0.339	-0.1	0.10	185
English vocabulary	4538	7.553	7.570	0.0	0.94	185
English listening comprehension	4538	0.778	0.887	0.1	0.11	185

Icibemba Subtask GRZ Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2636	2.086	2.117	0.0	0.78	113
Letter sound identification	2636	8.729	9.007	0.3	0.81	113
Syllable sound identification	2636	10.678	8.949	-1.7	0.37	113
Non-word reading	2636	7.222	5.911	-1.3	0.40	113
Oral reading	2636	5.946	4.690	-1.3	0.37	113
Reading comprehension	2636	0.663	0.651	0.0	0.94	113
English vocabulary	2636	6.723	7.074	0.4	0.14	113
English listening comprehension	2636	0.679	0.645	0.0	0.77	113

Kiikaonde Subtask GRZ Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2855	2.885	2.617	-0.3	0.11	119
Letter sound identification	2855	6.164	6.061	-0.1	0.91	119
Syllable sound identification	2855	8.666	6.528	-2.1	0.11	119
Non-word reading	2855	3.043	2.213	-0.8	0.13	119
Oral reading	2760	4.162	2.692	-1.5	0.04	119
Reading comprehension	2760	0.442	0.263	-0.2	0.03	119
English vocabulary	2855	9.325	8.834	-0.5	0.42	119
English listening comprehension	2855	1.385	1.031	-0.4	0.03	119

Lunda Subtask GRZ Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2448	2.402	2.604	0.2	0.24	106
Letter sound identification	2448	5.940	7.167	1.2	0.37	106
Syllable sound identification	2448	7.954	6.408	-1.5	0.39	106
Non-word reading	2448	4.967	4.298	-0.7	0.58	106
Oral reading	2448	5.492	3.970	-1.5	0.21	106
Reading comprehension	2448	0.618	0.475	-0.1	0.33	106
English vocabulary	2448	7.589	7.835	0.2	0.52	106
English listening comprehension	2448	0.708	0.740	0.0	0.76	106

Luvale Subtask GRZ Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	2071	2.250	2.337	0.1	0.46	103
Letter sound identification	2071	5.179	4.676	-0.5	0.53	103
Syllable sound identification	2071	14.612	6.849	-7.8	0.00	103
Non-word reading	2071	5.293	2.383	-2.9	0.00	103
Oral reading	2071	7.714	3.410	-4.3	0.00	103
Reading comprehension	2071	0.666	0.337	-0.3	0.00	103
English vocabulary	2071	7.781	7.491	-0.3	0.36	103
English listening comprehension	2071	0.962	0.907	-0.1	0.65	103

Silozi Subtask GRZ Schools	Combined Sample	Baseline Mean	Midline Mean	Diff.	T-test P-Value	df
Listening comprehension	5002	2.122	1.943	-0.2	0.24	195
Letter sound identification	5002	7.750	6.205	-1.5	0.11	195
Syllable sound identification	5002	14.298	8.738	-5.6	0.00	195
Non-word reading	5001	5.524	3.191	-2.3	0.00	195
Oral reading	5002	7.811	4.371	-3.4	0.00	195
Reading comprehension	5002	0.783	0.622	-0.2	0.03	195
English vocabulary	5002	8.156	7.207	-0.9	0.00	195
English listening comprehension	5002	0.673	0.800	0.1	0.15	195

## ANNEX 2. CORRELATION MATRIX BY LANGUAGE AND SUBTASK

### Chitonga

Chitonga Subtask	Listening comprehension	Letter sounds	Syllable sounds	Non-word reading	Oral reading	Reading comprehension	English vocabulary	English listening comprehension
Listening comprehension	1							
Letter sounds	0.20	1						
Syllable sounds	0.21	0.73	1					
Non-word reading	0.20	0.68	0.93	1				
Oral reading	0.18	0.61	0.86	0.90	1			
Reading comprehension	0.19	0.52	0.73	0.76	0.84	1		
English vocabulary	0.02	0.37	0.38	0.34	0.32	0.35	1	
English listening comprehension	0.09	0.33	0.33	0.30	0.29	0.32	0.69	1

### Cinyanja

Cinyanja Subtask	Listening comprehension	Letter sounds	Syllable sounds	Non-word reading	Oral reading	Reading comprehension	English vocabulary	English listening comprehension
Listening comprehension	1							
Letter sounds	0.24	1						
Syllable sounds	0.27	0.65	1					
Non-word reading	0.25	0.57	0.89	1				
Oral reading	0.26	0.57	0.90	0.92	1			
Reading comprehension	0.26	0.44	0.75	0.79	0.85	1		
English vocabulary	0.25	0.26	0.33	0.31	0.32	0.27	1	
English listening comprehension	0.24	0.25	0.32	0.32	0.32	0.29	0.57	1

## Icibemba

Icibemba Subtask	Listening comprehension	Letter sounds	Syllable sounds	Non-word reading	Oral reading	Reading comprehension	English vocabulary	English listening comprehension
Listening comprehension	1							
Letter sounds	0.30	1						
Syllable sounds	0.31	0.70	1					
Non-word reading	0.29	0.68	0.93	1				
Oral reading	0.26	0.58	0.90	0.91	1			
Reading comprehension	0.32	0.58	0.83	0.85	0.88	1		
English vocabulary	0.30	0.27	0.33	0.31	0.29	0.29	1	
English listening comprehension	0.25	0.26	0.32	0.31	0.29	0.28	0.55	1

## Kiikaonde

Kiikaonde Subtask	Listening comprehension	Letter sounds	Syllable sounds	Non-word reading	Oral reading	Reading comprehension	English vocabulary	English listening comprehension
Listening comprehension	1							
Letter sounds	0.23	1						
Syllable sounds	0.27	0.69	1					
Non-word reading	0.25	0.62	0.91	1				
Oral reading	0.22	0.56	0.85	0.87	1			
Reading comprehension	0.23	0.51	0.78	0.80	0.86	1		
English vocabulary	0.22	0.35	0.36	0.35	0.31	0.30	1	
English listening comprehension	0.27	0.34	0.36	0.34	0.31	0.32	0.67	1

## Lunda

Lunda Subtask	Listening comprehension	Letter sounds	Syllable sounds	Non-word reading	Oral reading	Reading comprehension	English vocabulary	English listening comprehension
Listening comprehension	1							
Letter sounds	0.28	1						
Syllable sounds	0.31	0.65	1					
Non-word reading	0.30	0.65	0.93	1				
Oral reading	0.31	0.61	0.91	0.93	1			
Reading comprehension	0.33	0.61	0.85	0.87	0.93	1		
English vocabulary	0.20	0.36	0.39	0.40	0.38	0.38	1	
English listening comprehension	0.22	0.28	0.35	0.36	0.35	0.35	0.55	1

## Luvale

Luvale Subtask	Listening comprehension	Letter sounds	Syllable sounds	Non-word reading	Oral reading	Reading comprehension	English vocabulary	English listening comprehension
Listening comprehension	1							
Letter sounds	0.30	1						
Syllable sounds	0.34	0.65	1					
Non-word reading	0.30	0.57	0.91	1				
Oral reading	0.29	0.52	0.91	0.94	1			
Reading comprehension	0.28	0.48	0.83	0.85	0.91	1		
English vocabulary	0.29	0.44	0.36	0.37	0.34	0.34	1	
English listening comprehension	0.33	0.42	0.35	0.34	0.32	0.34	0.61	1



## Silozi

Silozi Subtask	Listening comprehension	Letter sounds	Syllable sounds	Non-word reading	Oral reading	Reading comprehension	English vocabulary	English listening comprehension
Listening comprehension	1							
Letter sounds	0.26	1						
Syllable sounds	0.25	0.64	1					
Non-word reading	0.24	0.60	0.92	1				
Oral reading	0.23	0.56	0.90	0.93	1			
Reading comprehension	0.25	0.45	0.65	0.66	0.70	1		
English vocabulary	0.27	0.35	0.37	0.36	0.35	0.32	1	
English listening comprehension	0.24	0.33	0.36	0.36	0.36	0.35	0.47	1

### ANNEX 3. TABLE OF EGRA STUDIES IN ZAMBIA

STUDY/ DATE	PROVINCE	SAMPLE SIZE/ METHODOLOGY	METHODS	RESULTS
READ TO SUCCEED (RTS) (2012)	Northern, Luapula, Muchinga, Eastern, North- Western, Western  Total of 16 districts	200 government schools  2000 Grade 2 learners  2000 Grade 3 learners	Icibemba, Cinyanja, Kiikaonde, and Silozi  school data form; head teacher interview and performance checklist; MoE officials' interview form; teacher interview and performance checklist; and classroom observation form	<p>80% of Grade 2 and 3 learners fail to correctly sound out a letter or read a word in a paragraph suggesting a failure to master basic reading skills in early grade.</p> <p>The language spoken at home has a profound effect on the child's ability to learn to read. The study demonstrated statistically significant results for three subtasks: letter sound knowledge, non-word decoding, and oral passage reading, also referred to as reading fluency or reading aloud with <math>P &lt; 0.01</math>.</p> <p>There is a high correlation (<math>r = 0.876</math>) between oral passage reading and non-word decoding, which means that a child who is able to decode non-words is more likely to record high scores in oral passage reading and vice-versa.</p> <p>There is high correlation (<math>r = 0.716</math>) between reading comprehension and non-word decoding.</p> <p>There is least correlation between print awareness and reading comprehension (<math>r = 0.153</math>), which entails that a child's ability to decode is related to performance in oral passage reading and subsequently comprehension.</p> <p>Knowledge of orientation to print cannot be used as a proxy for reading comprehension competency.</p> <p>Over 85% of teachers show considerable knowledge in letter sounds and other requirements necessary to teach literacy.</p> <p>There is limited knowledge transfer from teacher to the learners due to poor pedagogical practices; thus, the methodology of lesson delivery is poor and its mostly teacher centered.</p> <p>Class teacher qualification and experience have a significant relationship with pupil scores (<math>p = 0.008</math>); as teacher experience increased, pupil performance scores also increased.</p> <p>84.3% and 87.8% of the schools in RTS targeted provinces have no library and no resource rooms respectively.</p>

STUDY/ DATE	PROVINCE	SAMPLE SIZE/ METHODOLOGY	METHODS	RESULTS
TIME TO LEARN (2012)	Lusaka, Central, Eastern, Copperbelt, Southern, Muchinga	102 community schools  1,500 Grade 2 learners	Cinyanja, Icibemba, and Chitonga  maximum of 20 students per school  community school questionnaire; community school head teacher questionnaire; zonal head questionnaire; Grade 2 teacher questionnaire and focus group discussion; standard classroom observation protocol for literacy; learner focus group discussion; and parent community school committee focus group discussion	Grade 2 learners have very good oral comprehension. Scores for reading and reading comprehension are consistently low.  68% of learners were unable to sound any letters correctly.  90% of learners were unable to read any non-words.  94% of learners were unable to read any words from the passage.  Higher rates of non-response were seen in the reading comprehension subtask. Learners had more success in the following subtasks:  Listening comprehension: 64% of responses were correct  Orientation to print: 55% of responses were correct  English vocabulary: 14% of responses were correct
READ TO SUCCEED (2014)	Northern, Luapula, Muchinga, Eastern, North- Western, Western	200 government schools  Grade 2 and 3 learners	Icibemba, Cinyanja, Kiikaonde, and Silozi  school data form; head teacher interview and performance checklist; MoE officials' interview form; teacher interview and performance checklist; and classroom observation form  Comparison between 2012 and 2014 results	Between 2012 and 2014, performance of Grade 2 learners increased by more than three-fold. In letter sound knowledge performance improved from 38.1% to 71.7% for Grade 2 and from 51.3% to 73.5% for Grade 3. This represents a percentage gain of 33.6% and 22.2% respectively.  Zero scores reduced from 61.8% to 28.3% in letter sounds and from 90.0% to 60.2% for non-words for Grade 2 learners. In reading passage (fluency), zero scores reduced from 89.0% to 69.0% while in reading comprehension they reduced from 94.4% to 78.4%.  Like baseline findings, the most difficult task for learners is reading comprehension. Results indicate that learners have substantially improved with respect to skills in letter sounds knowledge and basic reading, but they still lack understanding of what they read.  In all subtasks, boys performed slightly better than girls.  Learners whose home language is the same as language of instruction at school performed better than those that use a different language at home with a mean score of 6.23 (2.29 at baseline) compared to 4.98 (1.13 at baseline) respectively in oral reading fluency.  Availability of teaching and learning materials improved from 79.0% at baseline to 97.4% in all schools.

STUDY/ DATE	PROVINCE	SAMPLE SIZE/ METHODOLOGY	METHODS	RESULTS
				More teachers are conducting regular systematic assessments as the score increased from 70.3% at baseline to 83.9% at midline.
RTI/ECZ (2014)	National	486 schools including government (GRZ), grant-maintained, community, and private schools  4,855 grade 2 pupils		<p>Grade 2 pupils, on average, were struggling to read fluently.</p> <p>The average ORF rate for the local languages ranged from 1.84 to 8.40 words per minute, indicating that the typical Grade 2 pupil could sight-recognize a few words but struggled to string the words from a passage into a coherent sentence.</p> <p>Pupils were able to produce the correct sounds of only between 3.68 and 9.63 letters per minute across languages, indicating they lacked the foundation needed to decode unfamiliar words.</p> <p>Pupils had varied reading comprehension scoring on average between 43% and 78% correct responses across languages.</p> <p>Pupils who said they spoke the same language at home as the one in which they were instructed were able to read, on average, 2.5 words per minute (or 0.23 standard deviations) more than those who did not.</p> <p>Pupils who read to someone at home every day could read 8.9 words per minute more on average than those who had no one to read to (controlling for all other factors).</p> <p>Over 80% of pupils reported not having a language-of-instruction reader. Pupils who had a language-of-instruction reader on average read 3.9 words per minute more than those who did not have a reader.</p>
TIME TO LEARN (2014)	Lusaka, Central, Eastern, Copperbelt, Southern, and Muchinga	102 community schools  1,500 Grade 2 learners	Cinyanja, Icibemba, and Chitonga  maximum of 20 students per school  community school questionnaire; community school head teacher questionnaire; zonal head questionnaire; Grade 2 teacher questionnaire and focus group discussion; standard classroom observation protocol for literacy; learner focus group discussion; and	<p>The proportion of learners scoring zero on all comparable tasks decreased between 2012 and 2014 suggesting that they moved closer to the Ministry of Education Science, Vocational Training and Early Education (MESVTEE) standard for Grade 2 reading competences since 2012.</p> <p>Familiar language listening comprehension scores were relatively higher than other EGRA tasks, but still low overall.</p> <p>Learners performed significantly better in listening comprehension in the languages of instruction than in English, providing evidence in support of language of instruction policy.</p> <p>Boys significantly outperformed girls on most tasks, although the size of those differences remains small in absolute terms and neither group has a large proportion of learners who are reading with comprehension.</p> <p>Teachers were observed most often conducting letter sound and orientation to print activities and were least often observed practicing reading and listening comprehension.</p>

STUDY/ DATE	PROVINCE	SAMPLE SIZE/ METHODOLOGY	METHODS	RESULTS
			parent community school committee focus group discussion.	
ECZ (2018)	National	480 schools  4,700 Grade 3 learners		Results unpublished
EDA (2018)	Muchinga, Eastern, North- Western, Western, Southern	816 schools  Grade 2 learners	Chitonga, Cinyanja, Icibemba, Kiikaonde, Lunda, Luvale, and Silozi  Maximum 20 learners per school  learner questionnaire, teacher questionnaire, head teacher questionnaire, and school inventory checklist	<p>17.66% of learners scored zero in listening comprehension subtask, indicating that they understood very little of the short passage they heard.</p> <p>Forty percent of learners could not correctly identify a single letter sound out of 100 letters.</p> <p>Over half of the learners could not correctly identify any of the 100 syllables.</p> <p>66.22% of the learners scored zero on the non-word reading subtask, which measures decoding skills.</p> <p>64.07% of learners could not read a single word in the passage within a minute, indicating that the majority are non-readers.</p> <p>There was no clear trend in terms of boys or girls consistently outperforming one another across all the subtasks.</p> <p>Learners who attended ECE performed slightly better than those who did not.</p> <p>About 10.2% of learners demonstrated reading fluency and comprehension of grade level text at the end of Grade 2.</p> <p>8.10% of learners met the minimum proficiency levels for all three subtasks.</p> <p>ORF can be improved through reading practice, teaching methods, and availability of reading materials.</p> <p>Overall, a quarter of the learners were learning in a language that was not the primary language spoken at home. This indicates that some children were learning in a second language and as such may have required additional instructional support to build their vocabulary and listening comprehension skills to enable them to learn to read in the Lol.</p>

#### ANNEX 4. SCHOOLS NOT REACHED AT MIDLINE AND ATTRITION STATISTICS

Province	Zone	District	Location	PRIMARY SCHOOL NAME	EMIS	School Type	Reason for not reaching school
North-Western	Mushindamo	Kang'wena	R	Luamfula	3649	G	Out of reach
North-Western	Mushindamo	Kang'wena	R	Mapande	3662	G	Out of reach
North-Western	Manyinga	Manyinga	R	Lunsongwa Primary	3473	G	Different language of instruction
North-Western	Manyinga	Manyinga Zone Seven	R	Ndunga Primary School	3485	G	Different language of instruction
North-Western	Solwezi	Lwitadi	R	Mukenge Upper Basic	3743	G	Different language of instruction
North-Western	Solwezi	Matondo	R	Kayenge Upper Basic	3726	G	Different language of instruction
North-Western	Solwezi	Matondo	R	Milomboyi Middle Basic	3740	G	Different language of instruction
North-Western	Solwezi	Matondo	R	Sakayi Middle Basic	8449	G	Different language of instruction
North-Western	Solwezi	Matondo	R	Chinguvu Middle Basic	9113	G	Different language of instruction
North-Western	Solwezi	Mwange	R	Kapele Community	80041	C	Different language of instruction
North-Western	Solwezi	Zambezi-Central	R	Livanga Basic	8455	G	Different language of instruction
North-Western	Mushindamo	Musaka	R	Kyamato	660104	C	School closed
North-Western	Manyinga	Chifuwe	R	Kachavaluku	10124	C	Other
North-Western	Manyinga	Kashinakazhi	R	Mayawu	4389	G	Different language of instruction
North-Western	Manyinga	Kashinakazhi	R	Kanyisombo Primary	8010009	G	Different language of instruction

North-Western	Manyinga	Kashinakazhi	R	Kapidi	3640	G	Different language of instruction
North-Western	Manyinga	Kashinakaji	R	Kashinakaji Primary	3463	G	Different language of instruction
North-Western	Zambezi	Dipalata	R	Mukong'u Primary School	3744	G	Different language of instruction
Muchinga	Nakonde	Shem	R	Twanche	8330	C	Other
Western	Mulobezi	Nawinda	R	Kayombocommunity School	331002	C	Other
North-Western	Manyinga	Kashinakazhi	R	Kapidi	3640	G	Different language of instruction
North-Western	Manyinga	Kashinakazhi	R	Kapidi	3640	G	Different language of instruction
North-Western	Manyinga	Ndunga	R	Ndunga Primary	7155	G	Different language of instruction
Eastern	Chipata	Kapata	R	Kasima	7030016	G	School closed
Western	Shangombo	Natukoma	R	Libala Basic	4275	G	Out of reach
Western	Sikongo	Simbuu	R	Ng'umbele	3875	G	Other
Muchinga	Shiwangandu	Kalalantekwe	R	Shiwangandu	4590	G	Other
Muchinga	Shiwangandu	Kalalantekwe	R	Mumba	10010021	C	School closed
Muchinga	Shiwangandu	Kanakashi	R	Mayuke	2117	G	Other
North-Western	Chavuma	Likhoma	R	Nyakutemba Basic	80074	G	Different language of instruction



USAID Education Data Activity conducted statistical analysis and reviewed how average scores at baseline were affected by the sample attrition. Results are available in Table 22. As shown in the table, the percentage of the baseline results that were affected is equivalent to three percent of the sample, with results varying from zero percent in Chitonga (no schools affected) to three percent for Kiikaonde and Lunda schools. The most affected sample by a large margin was the Luvale sample, which lost up to 20 percent of schools. When looking at the average scores at baseline of schools that participated at midline and of schools that did not, we see that schools that did not participate at midline had, on average, slightly lower scores than the rest of the sample.

TABLE 22: SUMMARY OF BASELINE RESULTS OF SCHOOLS NOT REACHED AT MIDLINE

Subtask	Average	Icibemba	Kiikaonde	Silozi	Luvale	Lunda	Cinyanja	Chitonga
Percentage of baseline sample affected	3%	2%	3%	2%	20%	3%	1%	0%
t-test ORF total sample > ORF without schools that did not participate at midline	***	***	***	***	***	***	None	None
Baseline average scores: schools that participated at midline								
Listening comprehension (raw score)	2.1	1.6	2.8	2.0	2.2	2.3	1.8	2.3
Letter sound score	7.1	8.8	6.5	6.5	4.7	5.5	8.3	7.9
Syllable sound score	10.5	8.6	9.5	12.2	13.1	7.4	12.1	9.6
Non-word reading	4.6	5.8	3.4	4.7	4.8	4.7	4.6	4.3
Oral reading	6.0	4.7	4.7	6.8	7.0	5.1	8.2	4.8
Baseline average scores: schools that did not participate at midline								
Listening comprehension (raw score)	1.8	1.6	1.5	1.6	1.9	2.3	1.6	-
Letter sound score	4.4	7.5	3.7	3.0	4.2	7.9	3.5	-
Syllable sound score	9.2	8.4	9.3	5.1	10.7	11.5	2.6	-
Non-word reading	3.7	4.7	3.3	1.7	4.0	7.1	0.5	-
Oral reading	4.3	4.6	3.8	2.4	5.0	5.6	1.2	-
Baseline average scores: all schools								
Listening comprehension (raw score)	2.1	1.6	2.7	2.0	2.1	2.3	1.8	2.3
Letter sound score	7.0	8.8	6.4	6.5	4.6	5.5	8.2	7.9
Syllable sound score	10.5	8.6	9.5	12.0	12.6	7.5	12.0	9.6
Non-word reading	4.6	5.8	3.4	4.6	4.6	4.7	4.6	4.3
Oral reading	6.0	4.7	4.7	6.7	6.6	5.1	8.1	4.8

However, when looking at the combined sample, differences are unnoticeable as changes in the average scores are minimal. As shown in Table 22, the reading scores of the 30 schools dropped from the sample are on average lower than the rest of the sample. This difference is statistically significant at the one percent level for the average score of Icibemba, Kiikaonde, Silozi, Luvale and Lunda schools. Given that the schools are skewing the baseline sample toward lower results, our counterfactual if they were included in the midline would be that learners from these schools would not be contributing to improved results. As a result, we can confidently use the Baseline EGRA average scores as a point of comparison to the midline results. If USAID Education Data activity had included these schools at midline, the results could have been potentially lower than the actual Midline EGRA results.

The following descriptive statistics provide more information about how the baseline sample composition changes without schools not assessed at midline:

TABLE 23: SAMPLE ATTRITION BY MAIN DISAGGREGATION CATEGORIES

Disaggregates	Complete baseline data	Baseline without schools not assessed at midline	Percentage lost
Female participants	100%	96.46%	3.54%
Male participants	100%	96.48%	3.52%
GRZ school	100%	96.82%	3.18%
Community school	100%	95.41%	4.59%
Urban area	100%	100.00%	0.00%
Rural area	100%	96.07%	3.93%

As shown in Table 23, attrition by female participants was similar to attrition by male participants; attrition was higher at community schools than at GRZ schools; and attrition affected only rural schools as opposed to urban schools. Furthermore, Table 24 shows that Ksmirnov test p-values of combined K-S for attrition versus non-attrition schools at baseline, and non-attrition schools at baseline versus midline are below 0.05, confirming that the distributions are different within the sub-samples.

TABLE 24: KSMIRNOV TEST RESULTS

Groups	D	p-value
Baseline Schools		
Non-attrition schools	0.0684	0.0090
Attrition Schools	0.0000	1.0000
Combined K-S	0.0684	0.0180
Same schools at Baseline and Midline		
Baseline	0.0000	1.0000
Midline	-0.0836	0.0000
Combined K-S	0.0836	0.0000

FIGURE 11: ORAL READING FLUENCY, K-DENSITY, AND TWO-SAMPLE KOLMOGOROV-SMIRNOV TEST

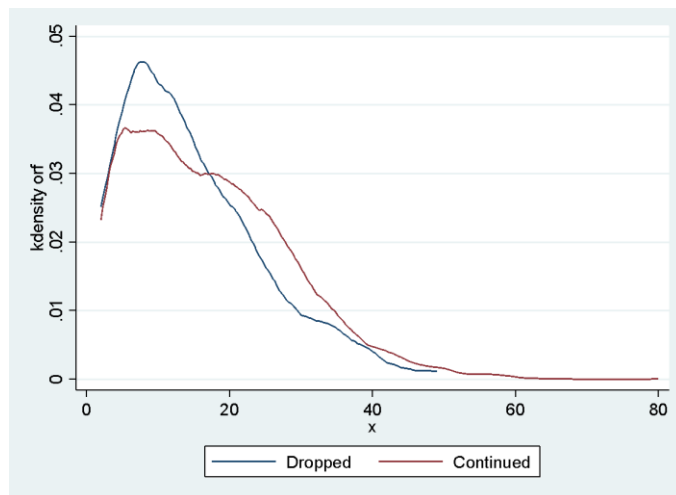


Figure 11, a K-density graph for oral reading fluency (truncated by zero), shows that dropped schools had a different distribution than schools that continued at midline. ORF scores are skewed left (zero), which indicates they have lower overall scores than non-dropped schools.

## ANNEX 5. METHODOLOGY

### SAMPLE: LANGUAGE MAPPING

In May 2018, the USAID Education Data Activity conducted a language mapping exercise to construct a valid sample frame. The exercise covered the seven official Lols: Chitonga, Cinyanja, Icibemba, Kiikaonde, Lunda, Luvale, and Silozi. The assessment team compiled a list of all GRZ-run public and community primary schools in the target provinces. They then disaggregated these by designated Lol within each district, the presence of an ECE program, and school location (i.e., urban or rural). The exercise listed 4,626 GRZ-run public and community schools in the 58 districts within the five target provinces. The database served as the sampling frame—the population from which schools were randomly selected.

TABLE 25: SCHOOLS IN SAMPLE FRAME

Province	Language	Total	School Type				Location	
			GRZ + No ECE	GRZ + ECE	COM + No ECE	COM + ECE	Urban	Rural
Southern	Chitonga	1,118	147	594	160	217	324	794
Eastern	Cinyanja	1,238	414	535	214	75	161	1077
Muchinga	Icibemba	525	307	85	133	0	21	504
North-Western	Kiikaonde	338	165	100	61	12	61	277
North-Western	Lunda	205	105	39	61	0	6	199
North-Western	Luvale	212	117	44	49	2	5	207
Western	Silozi	990	476	282	185	47	116	874
Total		<b>4,626</b>	<b>1,731</b>	<b>1,679</b>	<b>863</b>	<b>353</b>	<b>694</b>	<b>3,930</b>

Note: GRZ – Government School, COM – Community School, ECE – Early Childhood Education

### SCHOOL SELECTION

#### SAMPLE SIZE

An optimal sample is efficient, representative, reliable, and flexible. At baseline, DevTech, in consultation with USAID, proposed a sample size of 816 schools. This number was based on the sample size required to gather representative data that could measure change in the ability of Grade 2 learners to read at grade level. The number of sample schools for each Lol varied, but each Lol had to maintain a sample size of at least 80 schools. The sample size of at least 80 schools per Lol allows for the sample to be generalizable at the aggregate- and Lol-levels.<sup>14</sup> Results at lower levels are not generalizable.

#### SELECTION OF SCHOOLS

The 816 schools were selected from the sample frame using stratified random selection. This method ensured that the school sample was robust and adequately representative of province, district, and school characteristics. However, given the sample methodology, results are not generalizable other than at the Lol level.

<sup>14</sup> Power analysis was carried out for Lunda language (the smallest population size of 205 schools) using a confidence level of 95%, a desired total width of confidence interval of 2, and a standard deviation of 4.67 reported on the ORF subtask in the EGRA administered by RTI in 2014.

### STRATIFICATION AND ALLOCATION OF SAMPLE

Within each Lol, the 816 schools were allocated equally across districts. For the Lunda sample, the districts of Kabompo and Manyinga each had a population of eight schools. Therefore, all these schools were selected. From the remaining three districts in Lunda, the sample was equally allocated into 22 schools.

TABLE 26: ALLOCATION OF SCHOOL SAMPLE BY LANGUAGE AND DISTRICT

Province	Language	Districts	Names of Districts	Sampled Schools	Sampled Schools per District
Southern	Chitonga	13	Chikankata, Choma, Gwembe, Kalomo, Kazungula, Livingstone, Mazabuka, Monze, Namwala, Pemba Siavonga, Sinazongwe, Zimba	156	12
Eastern	Cinyanja	9	Chadiza, Chipata, Katete, Lundazi, Mambwe, Nyimba, Petauke, Sinda, Vubwi,	135	15
Muchinga		1	Chama	15	15
Muchinga	Icibemba	6	Chinsali, Isoka, Mafinga, Mpika, Nakonde, Shiwangandu	90	15
North-Western	Kiikaonde	5	Kalumbila, Kasempa, Mufumbwe, Mushindamo, Solwezi	85	17
	Lunda	5	Kabompo, Ikelenge, Manyinga, Mwinilunga, Zambezi	82	22 or 8
	Luvale	4	Chavuma, Kabompo, Manyinga, Zambezi	88	22
Western	Silozi	15	Kaoma, Limulunga, Lwampa, Lukulu, Mitete, Mogu, Mulobezi, Mwandi, Nkeyema, Senanga, Sesheke, Shangombo, Sikongo, Sioma, Kalabo	165	11
Total		58		816	

Within each district, the schools were allocated proportionally to rural and urban locations. The number of schools in urban locations is not large enough to make generalizable inferences, except for in the case of the Chitonga Lol. Within the urban and rural locations of each Lol, the schools were further allocated proportionally by school type (i.e., GRZ school or community school) and ECE status (ECE or no ECE).

TABLE 27: SCHOOLS IN BASELINE SAMPLE

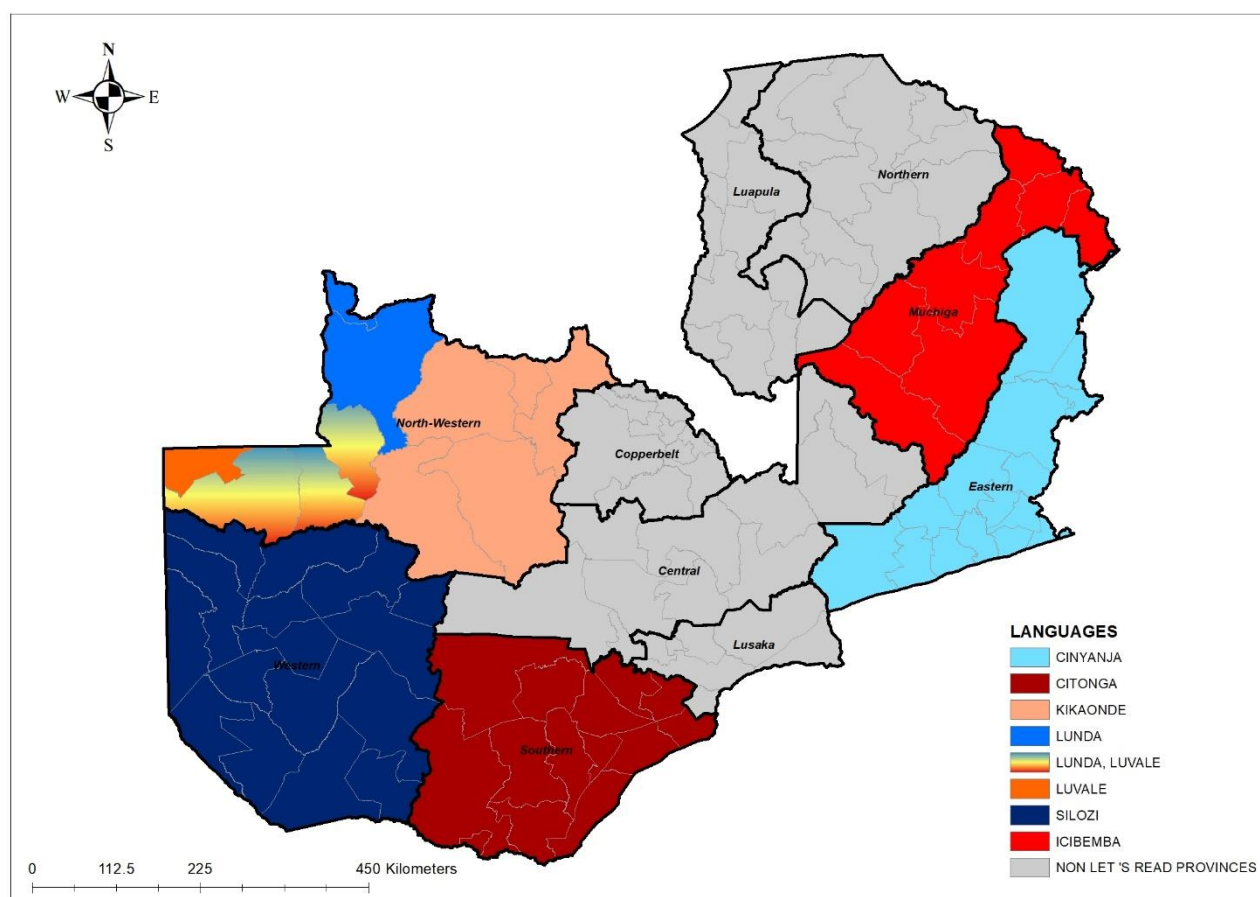
Province	Language	Total	School Type				Location	
			GRZ + No ECE	GRZ + ECE	COM + No ECE	COM + ECE	Urban	Rural
Southern	Chitonga	156	25	77	25	29	48	108
Eastern	Cinyanja	149	44	74	25	6	9	140
Muchinga	Icibemba	90	53	17	20	0	1	89

North-Western	Kiikaonde	86	50	26	9	1	16	70
North-Western	Lunda	82	47	18	17	0	1	81
North-Western	Luvale	88	44	22	21	1	1	87
Western	Silozi	165	83	49	25	8	14	151
Total		816	346	283	142	45	90	726

Note: GRZ – Government School, COM – Community School, ECE – Early Childhood Education

The following figure shows the distribution of local languages of instruction across the provinces in Zambia.

**FIGURE 12: DISTRIBUTION OF LOCAL LANGUAGES OF INSTRUCTION ACROSS THE PROVINCES IN ZAMBIA**



SOURCE: LANGUAGE MAPPING EXERCISE REPORT, EDUCATION DATA ACTIVITY, 2021

## ANALYTICAL PLAN

In December 2021, the USAID Education Data Activity team validated the data available in the Myna data collection application prior to providing clearance to MSI to proceed with data analysis. Once data was cleared for processing, analysts at MSI processed, cleaned, scored, weighted, and analyzed the datasets in Stata. DevTech conducted a simultaneous analysis using the dataset MSI provided to cross-

check calculated average scores for the main sub-tasks results and disaggregations. The teams used STATA to analyze the data. Graphs and tables were elaborated using Microsoft Excel.

## SAMPLE CHARACTERISTICS AND READING PERFORMANCE

The team calculated frequencies, averages, cross tabulations, and other descriptive statistics to discuss sample demographics and produce detailed summary statistics on learners' reading performance. Results were disaggregated by language, baseline, and midline results. To answer Research Question 2 (section 3.2), gender and school type disaggregations were also used in that specific section of the report.

## DATA ANALYSIS MODEL

The analysis employed OLS regression using data from the EGRA to examine changes in Grade 2 learners' performance between baseline and midline across EGRA subtasks as well as specific changes for boys, girls, learners attending GRZ schools, and learners attending community schools. The analysis calculated weighted proportions to determine changes between baseline and midline for learners' achievement relative to the MoE benchmarks, USAID Let's Read Project's definition of indicator ES.I-1, and USAID Let's Read Project's definition of indicator ES.I-48.<sup>15,16</sup>

TABLE 28: RESEARCH QUESTIONS AND ANALYTICAL METHODS

Research Question	Instrument	Analytical Methods
1. What is the change in Grade 2 learners reading performance from baseline to midline?	EGRA	OLS regression comparing baseline to midline
2. To what extent does gender and school type affect reading performance?	EGRA	OLS regression comparing baseline to midline for boys, girls, GRZ schools, and community schools
3. What are the midline reading proficiencies in Lols relative to the MoE national benchmarks and USAID Let's Read Project targets?	EGRA	Weighted proportions comparing baseline to midline performance for MoE benchmarks and ES.I-1; and weighted proportions for the change in proficiency level for ES.I-48
4. What are the significant predictors of ORF?	EGRA and SSME	Multivariate OLS regressions with learner and teacher questionnaire variables

## MEASURES: READING SKILLS

**Listening Comprehension.** This subtask directly measures oral language comprehension in the Lol and indirectly measures oral vocabulary (RTI International, 2016). DTo administer this test, the assessor reads aloud a short passage, after which, the learner answers six comprehension questions about the story. The answers are scored as correct, incorrect, or no response. The total score is the value of correct responses ranging between zero to five. Listening comprehension is not timed, and scores are not adjusted for time.

<sup>15</sup> Education Services ES.I-1: Percent of learners who attain a minimum grade level proficiency in reading at the end of Grade 2 with U.S. Government assistance. The threshold for indicating the ability to read is reading at 20 cwpm or better, decoding at 15 cwpm, and achieving comprehension scores of 40% or better.

<sup>16</sup> ES.I-48: Percent of learners targeted for U.S. Government assistance with an increase of at least one proficiency level in reading at the end of Grade 2.



**Letter Sound Identification.** This subtask assesses alphabetic principle—the ability to recognize letters and their corresponding sounds (RTI International, 2016). The assessor provides the learner with a grid of 100 upper-case and lower-case letters (10 rows and 10 columns) from which the learner pronounces the letter sounds for each one. The answers are scored as correct, incorrect, or not attempted. The total score is the value of correct responses ranging from 0 to 100. The administration of the subtask stops for learners who get the first 10 letter sounds incorrect. Letter sound identification is timed. The learner has 60 seconds to complete this task. Learners who complete this subtask—attempt all the letter sounds—in less than 60 seconds have their score adjusted for time.

**Syllable Sound Identification.** This subtask also assesses alphabetic principle, but it is used for languages with mainly open syllables or when reading instruction stresses combinations of syllables (RTI International, 2016). The assessor provides the learner with a grid of 100 syllables (10 rows and 10 columns) from which the learner pronounces the syllables. The answers are scored as correct, incorrect, or not attempted. The total score is the value of correct responses ranging from 0 to 100. The administration of the subtask stops for learners who get the first 10 syllables incorrect. Syllable sound identification is timed. The learner has 60 seconds to complete this task. Learners who complete this subtask—attempt all the syllable sounds—in less than 60 seconds have their score adjusted for time.

**Non-Word Reading.** This subtask judges decoding by requiring the learner to apply the phonemes from their language to non-words rather than relying on recognizable familiar (sight) words (RTI International, 2016). The assessor provides the learner with a grid of 50 non-words (five rows and five columns) from which the learner reads the non-words. The answers are scored as correct, incorrect, or not attempted. The total score is the value of correct responses ranging from 0 to 50. The administration of the subtask stops for learners who get the first five non-words incorrect. Non-word reading is timed. The learner has 60 seconds to complete this task. Learners who complete this subtask—attempt all the in non-words—in less than 60 seconds have their score adjusted for time.

**Oral Reading Fluency.** This subtask evaluates fluency—the ability of the learner to read a grade-level text with speed, accuracy, and expression (RTI International, 2016). The assessor provides the learner with a grade-level passage from which the learner reads aloud. The assessor scores each word in the passage as read correct, incorrect, or not attempted. The total score is the value of correct responses ranging from zero to the total amount of words in the passage. The administration of the subtask stops for learners who get the first four to seven words incorrect—five words in Chitonga, five words in Cinyanja, six words in Ibibemba, seven words in Kiikaonde, four words in Lunda, six words in Luvale, and five words in Silozi. Oral reading fluency is timed. The learner has 60 seconds to read the passage. Learners who complete this subtask—attempt all the words—in less than 60 seconds have their score adjusted for time. Reading fluency is the ability to read a text quickly, accurately, and expressively (National Reading Panel, 2000). Fluency can be conceptualized as antecedent to and the result of comprehension. Some aspects of reading fluency, such as expressiveness in reading, are linked to text comprehension. Other components, such as recognizing words quickly and efficiently, as well as processing sentence structure, are prerequisites for comprehension (Snow, 2002). Fluency can be seen as the bridge between word recognition and text comprehension. While decoding is the first step to word recognition, readers must advance their decoding ability until it eventually becomes automatic. Then, their attention shifts from reading individual letters and words, to reading ideas contained in a text (RTI International, 2016). It is critical for fluency to become an automatic process due to the short-term working memory constraint. If learners decode too slowly because they are paying attention to each individual part of a word, they may not have enough space in their working memory for an entire sentence and may forget the beginning of the text sequence when finished reading. If they are not capable of retaining said sequences in their working memory, they will not be able to extract the sentence's meaning, and thus, will be unable to understand it (Abadzi, 2006). Like comprehension,

fluency itself is a higher-level skill. It requires individuals to perform the processes of decoding, identifying the meaning of words, processing the structure and grammar of the text, and making inferences, all at a quick pace (RTI International, 2016).

**Reading Comprehension.** This subtask measures reading comprehension using explicit and implicit comprehension questions based on the oral reading passage (RTI International, 2016). The assessor only asks reading comprehension questions that apply to how far the learner read in the oral reading passage. Each reading comprehension question has a specific number of attempted words associated with it. The assessor scores each question as correct, incorrect, non-response, or not attempted. The total score is the value of correct responses ranging from zero to five. Reading comprehension is not timed. The learner cannot refer back to the oral reading passage. Reading comprehension is the primary goal or objective of reading. It allows learners to give meaning to what they read and use that meaning, not only to enjoy reading, but also to learn new things, especially academically. Reading comprehension is a complex process that requires both extracting and constructing the meaning of a text, and depends largely on the interrelation of motivation, attention, strategies, memory, prior knowledge of the subject, knowledge of the language, vocabulary, decoding, fluency, and more (Snow, 2002).

**English Vocabulary.** This subtask measures English vocabulary in terms of individual words for body parts, objects, and spatial relationships (RTI International, 2016). For the administration, the assessor shows the learner a sheet depicting different body parts, objects, and spatial relationships. The learner says the corresponding word in English for each picture. The assessor scores each question as correct, incorrect, non-response, or not attempted. The total score is the value of correct responses ranging from 0 to 20. English vocabulary is not timed.

**English Listening Comprehension.** The subtask directly measures oral language comprehension in English and indirectly measures oral vocabulary (RTI International, 2016). In the administration, the assessor reads aloud a short passage, after which, the learner answers six comprehension questions about the story. The answers are scored as correct, incorrect, or no response. The total score is the value of correct responses ranging between zero to five. Listening comprehension is not timed, and scores are not adjusted for time.

## MEASURES: CHANGE IN GRADE 2 LEARNERS READING PERFORMANCE OVER TIME

To respond to Research Question 2, we analyzed results of pre-reading skills (listening comprehension); initial reading skills (letter sound, syllable sound, and non-word decoding); and fluency confirmation skills (oral reading fluency and reading comprehension. For all skills, we compared zero scores and average performance by language. Additionally, in this section, we present the results from inferential analysis using OLS regression to compare baseline and midline results for each subtask by Lol using the sub-task scores as dependent variables, and time as the independent variable. This model takes the form of:

### EQUATION:

$$Y_i = \beta_0 + T_i + \varepsilon_i$$

For learner  $i$  in school  $j$ , where  $Y_i$  is the reading score (ORF) of learner  $i$ . Hence, the outcome is a function of  $\delta$  the treatment effect (equal to 1 for all learners),  $T_i$  is the time factor indicator/learner (0 baseline, 1 midline), and  $\varepsilon_i$  is the remaining error that is present. For this model we use OLS and conducted separate analyses in the different Lols.

## MEASURES: SIGNIFICANT PREDICTORS OF ORF


To answer Research Question 4, we used inferential analysis with variables from the learner questionnaire and teacher questionnaire that predict learners' midline scores in ORF. Specifically, we ran a multivariate OLS regression for each of the Lols in the form of:



### EQUATION:

$$Y_i = \beta_0 + C_i + \varepsilon_i$$

For learner  $i$  in school  $j$ , where  $Y_i$  is the ORF at midline of learner  $i$ . Hence, the outcome is a function of,  $C_i$  the independent variable of interest, and  $\varepsilon_i$  is the remaining error that is present. For this model we use OLS and conducted separate analyses in the different Lols for each independent variable of interest.

The dependent variable for the regression is ORF scores at midline. Coefficients of independent variables are tested with t-student. Results with a p-value of less than 0.05 are considered statistically significant. In order to find an OLS model with the best fit possible, we tried a different set of variables, which are described in the following table:

Variable	Description	Expected Relationship
 <b>Learner Measures</b>		
<b>Gender</b>	This variable corresponds to the following question from the learner questionnaire: "Are you a boy or a girl?" This variable is binary with zero used for girls and one used for boys.	The coefficient in a regression will show the difference in performance between boys and girls. Girls tend to perform better than boys.
<b>Read books on your own</b>	This variable corresponds to the following question from the learner questionnaire: "Did you read books on your own during school yesterday?" This variable is binary zero for no and one for yes.	Students that read books on their own should perform better than those who do not.
<b>Attended Pre-K</b>	This variable corresponds to the following question from the learner questionnaire: "Did you go to nursery/preschool/kindergarten before starting Grade 1?" This variable is binary with zero used for no and one used for yes.	Students that attended ECE should perform better than those that did not.
<b>Learners read out loud at home</b>	This variable corresponds to the following question from the learner questionnaire: "How often do you read out loud to someone at home?" This variable is categorical with one used for never, two used for sometimes, and three used for every day.	Students that practice reading more often should perform better than those that do not practice.
<b>Other reading materials at home</b>	This variable corresponds to the following question from the learner questionnaire: "Are there other materials for you to read at your home?" This variable is binary with zero used for no and one for yes.	Students with reading materials at home have more opportunities to practice reading at home and should perform better than those that do not have reading materials at home.
<b>School lessons at home during school closure</b>	This variable corresponds to the following question from the learner questionnaire: "When schools were closed, did you learn school lessons at home?" This variable is binary with zero used for no and one for yes.	This is a proxy of learner's engagement in education activities during the COVID-19 pandemic. Learners with school lessons at home should perform better than

		those that did not receive school lessons at home.
<b>Absenteeism</b>	This variable corresponds to the following question from the learner questionnaire: “Were you absent from school on any days last week?” This variable is binary with zero used for no and one for yes.	Students with more absenteeism should perform worse than students with less absenteeism.
<b>Socioeconomic index</b>	This variable corresponds to the following questions from the learner questionnaire: “Where do you normally get your drinking water from at home?”; “Does your home have electricity?”; “How is food most often cooked at your home?”; “When you are at home, what type of toilet do you use?”; “Does your family have the following items in your home: radio, phone, TV, computer, refrigerator, bicycle, motorbike, car/truck, cattle/livestock?” This is an index that goes from zero to eight. It adds whether the learner’s family meets (one) or doesn’t meet (zero) factors such as having a TV, radio, computer, phone, materials used for cooking, space used for cooking, source of water, and toilet type.	The higher the socioeconomic index, the better the socioeconomic conditions the student has at home, which should positively influence their learning and performance.
 <b>Teacher Measures</b>		
<b>Teacher’s comfort in Lol</b>	This variable corresponds to the following question from the teacher questionnaire: “What is your comfort in the language of instruction?” This variable is categorical with one used for “not comfortable,” two used for “somewhat comfortable,” three used for “comfortable,” and four used for “very comfortable.” This variable can become binary by collapsing “not comfortable” and “somewhat comfortable” into one category and “comfortable” and “very comfortable” into a second category.	Learners whose teachers are more comfortable in the Lol should improve better than those whose teachers are less comfortable. Comfort in Lol is a proxy of how well the teacher can teach in that Lol.
<b>Teacher supported remote learning</b>	This variable corresponds to the following question from the teacher questionnaire: “What did you do to support remote learning during school closures?” This variable is a mark all that apply question that is rescored into a binary variable with zero used for “did not provide support” and one used for “provided support.”	Learners whose teacher provided remote learning support during the COVID-19 pandemic should perform better than learners whose teachers did not provide any support.
<b>Teacher can access resources from USAID Let’s Read Project</b>	This variable corresponds to the following question from the teacher questionnaire: “Do you have access to teacher resources provided by USAID Let’s Read Project?” The variable is binary with zero used for no and one for yes.	Learners with teachers that have access to quality educational resources are expected to perform better than those with teachers that do not have access to such resources.
 <b>School Measures</b>		
<b>School has ECE</b>	This variable comes from the school information: “Does this school have ECE?” The variable is binary with zero used for no and one for yes.	Learners from schools with ECE should perform better, as the schools with ECE tend to have a better school and teaching infrastructure.
<b>GRZ or Community School</b>	The variable is binary with zero used for community school, and one used for government schools.	Learners from GRZ schools should perform better than learners from community schools.

<b>Language of instruction</b>	One dummy variable was created by language depending on the language of the EGRA tool applied for data collection. For example, if the EGRA was applied in Chitonga, the dummy variable for “Chitonga” would be one, and zero for any other language.	This variable is used to account for differences by Lol, all of them are expected to have a positive relationship with learners’ performance.
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## SAMPLE WEIGHTS CONSTRUCTION

The Midline EGRA assessed the same sample of schools that were assessed at baseline. For the baseline sample, a three-stage random sampling approach was used. The team randomly chose schools within each district while ensuring that both urban and rural schools and various school types were represented in the sample. The learners tested for the assessment were randomly selected from within the sampled schools. Since not every school and learner had an equal chance of selection, statistical procedures were needed to adjust for design effects. Therefore, analysts constructed appropriate weights based on the probability of selection for each location, school, and learner in the sample. Sampling weights were constructed at the district level, school level, and learner level and used in the analysis in this report. At midline, the study used the same schools selected at baseline. However, it updated the sample frame for the purpose of calculating updated sample weights.

We used a three-stage sampling technique. In stage one, schools were randomly selected in each district proportional to the total number of urban and rural schools (i.e., school location). In stage two, within each rural and urban location category, schools were selected randomly proportionately to government-run public schools with and without ECE programs or community schools with and without ECE programs (i.e., school type). In stage three, within each of the sampled schools, up to 10 boys and 10 girls were randomly selected from the Grade 2 class roster during data collection for the baseline.

With this sampling technique, schools (within each rural and urban category—school location) are selected for stage one sampling, where the probability of selection of each school (rural or urban) is proportional to the total number of schools within each school location category. The weight  $w_1$  for stage one is the inverse of the probability of school selection. That is,

$$w_1 = \frac{\text{Total number of schools within each school location in the district}}{\text{Number of sample schools within each school location in the district}}$$

Within each rural and urban school (school location) category, schools (within government-run public schools with and without ECE or community schools with and without ECE program) are selected for stage two sampling, where the probability of selection of each school (government-run public schools with and without ECE or community schools with and without ECE program) is proportional to the total number of schools within each school location and each school type. The weight  $w_2$  for stage two is:

$$w_2 = \frac{\text{Total number of schools within each school type and school location in the district}}{\text{Number of sample schools within each school type and school location in the district}}$$

In stage three, the probability of selection of students (by gender) in the school is the number of students to be selected divided by the number of students (by gender) in Grade 2. The weight  $w_3$  for stage three is:

$$w_3 = \frac{\text{Total number of Grade 2 students within each gender in the selected sample school}}{\text{Number of sample students selected within each gender in the sample school}}$$

The final weight  $w$  is the product of all three sampling weights  $w_1$ ,  $w_2$ , and  $w_3$ . Therefore,

$$W = W_1 * W_2 * W_3$$

If the weights are equal, it follows that the weighted mean is the same as the unweighted mean. While in theory, this is what should happen, it is usually not the case due to fewer pupils sampled in some schools, stratification of schools, and other factors. However, the team obtained weights that are close to each other, thus reducing sample bias.

## EGRA TOOLS

In Zambia, the USAID-funded Read to Succeed project developed an EGRA tool in 2014 through a multi-stakeholder adaption workshop. In addition, ECZ developed an EGRA tool for the assessment they conducted in 2018. USAID Education Data Activity staff along with curriculum, reading, and language specialists from ECZ reviewed and adapted the EGRA tools at a four-day instrument adaptation workshop in August 2018. Based on the workshop and discussions with USAID, USAID Education Data Activity chose to use existing subtasks (for which the order of the items was changed) as well as to develop new subtasks to ensure test security. For each of the GRZ-designated Lols, multiple versions of the listening comprehension, syllable identification, non-word reading, oral reading passage, and comprehension subtasks were developed. The individual letters in the alphabetic knowledge subtask of previously used EGRAs were scrambled. Three versions of the English listening comprehension subtask were also developed. All of the different versions of the subtasks were divided up to create three different forms for each Lol.

The different forms of the instruments were piloted in 14 schools in September 2018. The pilot study provided the assessment team with the opportunity to evaluate the reliability of the instruments. The pilot sample consisted of approximately 90 learners per Lol, except for Luvale, which had a sample of 75 learners. Within each Lol, each of the three forms were piloted with 30 learners. The pilot data results enabled the assessment team to determine which versions of each subtask were best to use during the Baseline EGRA.

In partnership with MoE, ECZ, and USAID, USAID Education Data Activity held a validation workshop on October 9<sup>th</sup> to finalize the Baseline EGRA tools for each of the seven Lols as well as English. With USAID-approval, the final versions of the EGRA tools were programmed into MSI's EGRA application, Myna, by USAID Education Data Activity staff and then loaded onto electronic tablets to be used at baseline.

## EGRA TOOL RELIABILITY

This section briefly discusses results of psychometric analyses used to determine reliability of EGRA tools, the degree of agreement between assessors' ratings, and the relation between the reading skills assessed through various subtasks. The EGRA tool has been tested worldwide and is considered a reliable tool to assess reading performance in early grades. The team analyzed reliability characteristics of the Zambia EGRA tools using Cronbach's alpha ( $\alpha$ ) values based on the percent correct for all timed and untimed subtasks in an EGRA tool. Results are shown in Table 29. The  $\alpha$  for each language's EGRA tool ranged from 0.78 for Kiikaonde to 0.85 for Icibemba, which is considered strong. For educational tests, the  $\alpha$  value of 0.70 is considered acceptable (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education 2014; RTI International 2016).



TABLE 29: EGRA TOOL RELIABILITY (CRONBACH'S ALPHA)

Assessment or Subtask	Reliability - Cronbach's Alpha						
	Chitonga	Cinyanja	Icibemba	Kiikaonde	Lunda	Luvale	Silozi
EGRA	0.78	0.81	0.85	0.78	0.83	0.83	0.81
Listening comprehension	0.48	0.58	0.60	0.54	0.54	0.57	0.56
Letter sounds	0.13	0.34	0.96	0.94	0.96	0.97	0.96
Syllable sounds	0.97	0.97	0.97	0.96	0.96	0.97	0.97
Non-word reading	0.93	0.94	0.60	0.96	0.96	0.93	0.94
Oral reading	0.94	0.97	0.95	0.00	0.98	0.98	0.86
Reading comprehension	0.39	0.00	0.19	0.10	0.61	0.52	0.37
English vocabulary	0.82	0.84	0.85	0.82	0.79	0.84	0.83
English listening comprehension	0.78	0.80	0.85	0.81	0.82	0.78	0.82

The subtask correlations reveal how the subtasks and their underlying reading skills are related to each other. Learners acquire reading skills in stages, and strong performance in one subtask alone does not make a learner successful in reading. The EGRA tool is designed so that the subtasks build on one another and work together to reach the ultimate goal of achieving reading comprehension. Correlations between subtasks capture such associations. Correlations between subtasks are calculated using the Pearson correlation coefficient ( $r$ ). The closer  $r$  approaches one, the stronger the correlation, i.e., positive linear relationship, between the subtasks.<sup>17</sup> Correlation matrices divided by subtask and language are available in Annex 2. Overall, at midline, correlation results and trends are the same as at baseline. Five very strong correlations are consistent across all languages: non-word reading and syllable identification; oral reading and syllable identification; oral reading and non-word reading; reading comprehension and non-word reading; and reading comprehension and oral reading. There are very strong relationships between ORF and the initial reading skills of syllable identification and non-word reading for all languages, implying that an ability to correctly identify and pronounce syllables and decode words is predictive of reading fluency ability. Very strong relationships between reading comprehension and ORF and non-word reading for all languages suggests that an ability to decode and read a passage fluently are predictive of reading comprehension. These strong correlations between subtasks support the reliability of the EGRA tools used.

## DATA QUALITY ASSURANCE

Although all assessors scored above the gold standard during training, to ensure reliability and consistency in scoring among all the assessors, the USAID Education Data Activity conducted IRR tests during data collection. At each school, two assessors assessed two (or three) learners independently at the same time. Results were analyzed using Cohen's kappa ( $\kappa$ ) coefficient to measure the IRR or the degree of similarity in their ratings. A  $\kappa$  of zero indicates that there is no agreement between raters outside of random chance, while one indicates perfect agreement between raters. Interpreting the meaning of  $\kappa$  follows the guidelines of  $0.0 < \kappa \leq 0.2$  as slight agreement;  $0.2 < \kappa \leq 0.4$  as fair agreement;

<sup>17</sup> A guideline for interpreting the strength of the relationship suggests  $0.00 < r < 0.19$  is a very weak positive relationship;  $0.20 < r < 0.39$  is a weak positive relationship;  $0.40 < r < 0.59$  is a moderate positive relationship;  $0.60 < r < 0.79$  is a strong positive relationship; and  $0.80 < r < 1.0$  is a very strong positive relationship (Evans 1996).

$0.4 < \kappa \leq 0.6$  as moderate agreement;  $0.6 < \kappa \leq 0.8$  as substantial agreement; and  $0.8 < \kappa \leq 1$  as almost perfect agreement (Landis and Koch 1977; RTI International 2016). Results shown

in Table 30 demonstrate that the IRR was greater than 0.9 for each of the seven languages. Near-perfect agreement between the assessors was achieved for all languages, indicating very high data reliability.

TABLE 30: KAPPA INTER-RATER RELIABILITY

Language	IRR (Kappa)
Chitonga	0.92
Cinyanja	0.95
Icibemba	0.95
Kiikaonde	0.94
Lunda	0.96
Luvale	0.97
Silozi	0.96

All teams used electronic tablets preloaded with all the EGRA and SSME tools. Internal quality checks programmed into the tablets for each tool ensured that many questions could only be answered with reasonable responses. For example, restrictions for learner age ensured that assessors could not record unreasonable numbers such as 78 or 101 years. Skip logics also increased the reliability and accuracy of the recorded responses by ensuring that questions were only asked to respondents when deemed relevant based on their prior responses. The tablets were linked to a Myna dashboard to allow the data to be frequently uploaded to servers directly from each tablet. The assessment team periodically downloaded this data to conduct data quality checks. Quick and periodic access to data enabled the team to identify and alert assessors to issues immediately and to instruct assessors on ways to remedy errors. DevTech's Master Trainer conducted online data quality checks to ensure that the correct schools were surveyed, sample targets were sufficiently achieved, and enumerators maintained acceptable measures of IRR.

Quality assurance was also provided through the close monitoring of assessors in each team by QCOs who provided daily feedback sessions throughout data collection. WhatsApp groups were setup to maintain constant communication between field teams and USAID Education Data Activity staff for rapid troubleshooting when needed.



## **ANNEX 6. SCOPE OF WORK**

### **C.1 ACTIVITY TITLE**

The activity title is **USAID EDUCATION DATA**.

### **C.2 PURPOSE**

The purpose of the USAID Education Data Activity is to provide distinct assessment, data management, research, and evaluation services to monitor and track the progress of the USAID's Let's Read Zambia bilateral activity (formerly known as Sustainable and Effective Education Delivery).

### **C.3 BACKGROUND**

Zambia's education system faces daunting challenges in its ability to provide adequate and quality education services. A high pupil-teacher ratio (59:1), high pupil-textbook ratio (10 pupils per book), and extremely poor learning outcomes in critical areas such as reading, and math are compounded by a weak education management system and poor infrastructure. Since school fees were abolished in 2002, Zambia has made significant gains toward ensuring near universal access to primary education to the approximately 3.2 million children enrolled in Grades 1-7, yet learners reading levels remain low, particularly in community schools which serve 20 percent of the most economically disadvantaged children.<sup>18</sup> Only 30 percent of children who enter the school system manage to complete the education cycle through Grade 12. The poor quality of education has exacerbated inequities for girls and disadvantaged children in general. Given the learner demographics, teacher qualifications, and resource challenges facing most Zambian schools, improving learning outcomes is critical.

The Early Grade Reading Assessment (EGRA) was first administered in Zambia in 2011-2012 to students in several targeted provinces but not on a national scale. The results revealed that 90 percent of children in Grade 2 and 70 percent in Grade 3 were not able to read one word in their local Zambian language. Further, the Zambia Grade 5 National Assessment Survey is conducted every two years and has consistently shown learning achievement below the 40th percentile in both English and Zambian languages. In addition, the Southern African Consortium for Monitoring Education Quality (SACMEQ) of 2010 indicated that among the Grade 6 learners that were tested in reading, only 27.4 percent were able to read at a basic competency level. In 2014, USAID contracted Research Triangle Institute (RTI International) to work with the Examination Council of Zambia (ECZ) to conduct the first national EGRA baseline, which revealed that Zambian students were still performing below average. The previous EGRA report is provided.

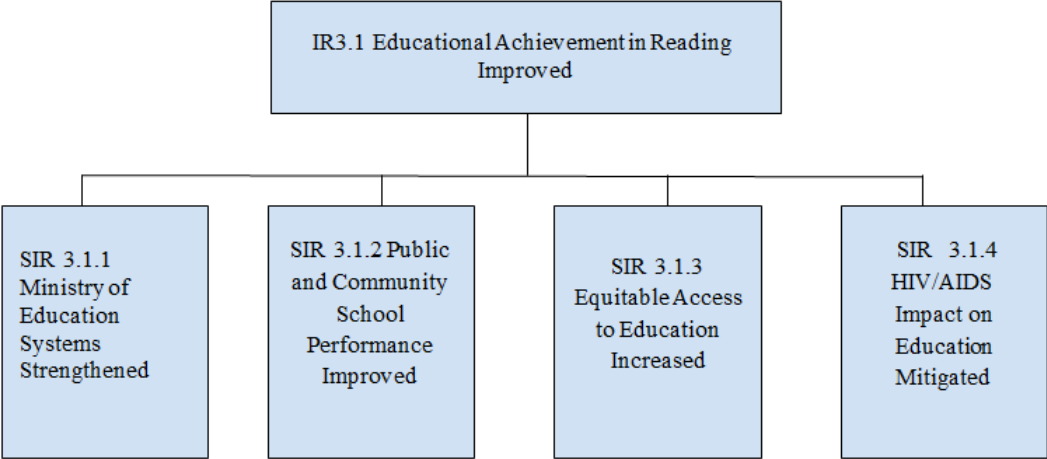
In order to address the low literacy levels among learners, the Ministry of Education (MOE) developed a national literacy strategy of teaching reading in local languages and also introduced these local languages as a medium of instruction in Grades 1 through 4. The MOE shifted the focus from access to quality learning with assessment data providing the critical role of tracking the progress of student learning over time. Timely information on student reading achievement and its implication for future learning provides a basis for dialogue to inform policy and decision making among education leaders.

USAID/Zambia Education efforts over the past five years have focused on early grade reading interventions to confront these challenges. These programs included STEP-Up, Read to Succeed, Time to Learn, Zambia USAID Education Data and other Government to Government agreements. These USAID funded activities were designed to Improve Educational Achievement in Reading by 2017

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<sup>18</sup> Republic of Zambia, Ministry of Education, Science, Vocational Training and Early Education: Educational Statistical Bulletin 2015

through 1) strengthening the systems of the MOE; 2) improving the performance of public and community schools; 3) increasing equitable access to education for all students and; 4) mitigating the impact of HIV/AIDS on the education sector. The efforts over the last five years, as well as the future efforts are rooted in the development hypothesis that if time spent on reading instruction is sufficient; if children are taught to read in a language that they speak and understand; if there are enough and relevant teaching and learning materials in the seven local languages; if teachers are well-trained, mentored, and coached to teach and formatively assess reading acquisition in local languages using the appropriate approaches; if the education system is adequately equipped to test early grade reading skills and report and analyze results; if the MOE has the appropriate capacity to implement and manage resources at all levels; and if families and communities are involved in the education of their children; then early grade students will be able to read with fluency and comprehension at grade level. The development hypothesis is depicted in the results framework below:



### C.4 SUCCESS

Success will be measured by the completion of two EGRAs for children in Grade 2 measuring reading levels during the three year and six-month contract period. Upon completion of each EGRA, proper dissemination and learning will be critical for the wider USAID and stakeholder audience in Zambia to apply lessons learned and trends to future programming.

### C.5 KEY STAKEHOLDERS

Implementation of this activity will require coordination and collaboration with key stakeholders. The following list provides key stakeholders and their respective roles and responsibilities within the USAID Education Data Activity:

TABLE 31: KEY STAKEHOLDER LISTING

Stakeholder	Role
USAID/Zambia	USAID/Zambia will have oversight of the performance of the contract. USAID/Zambia will serve as a liaison between the contractor and MOE, and will obtain necessary approvals to facilitate data collection and other EGRA related activities in the provinces, districts, and schools. The Education Office will work with the contractor to disseminate EGRA findings to various stakeholders.

Stakeholder	Role
Ministry of Education	The MOE will be involved and consulted during activity planning and implementation to ensure alignment with policy provisions and institutionalization of EGRA related activities in the education system. The contractor must work closely with the MOE's Directorate of Planning and Information Management and Directorate of Curriculum and Standards, to inform, develop, and/or finalize the content of instruments, and ensure alignment of school level data with the Education Management Information System (EMIS). The MOE will coordinate provincial, district, zonal, and school level activities. In addition, the directorates will collaborate with the contractor to disseminate EGRA findings to the lower levels of the education system.
Examination Council of Zambia	As an institution mandated to conduct Zambian national assessments and examinations, the ECZ will be involved at all stages of EGRA activities; i.e., from the preparation of surveys to dissemination of EGRA findings both at national and regional levels. Working in close collaboration with the contractor, the ECZ's role will involve, but not be limited to, selecting representative samples for the EGRA, developing and/or finalizing the content of instruments, identifying data collectors/assessors; assisting to develop, pre-test, and finalize survey instruments; collecting and analyzing assessment data and organizing meetings/fora to disseminate EGRA findings to relevant stakeholders.
Provincial Education Offices and District Education Board Secretary Office	The Provincial and District Education Offices will work with the contractor to coordinate sub-national level activities, which include preparation for EGRA surveys, identification of assessors and providing necessary authorizations, supporting data collection processes and regional dissemination workshops. As implementing units of education programs, the provincial and district levels will use EGRA findings for planning, management, monitoring, and evaluation of education projects.
Target schools	These are the intended primary beneficiaries of the Let's Read Zambia activity from which the EGRA sample will be drawn. In addition to providing USAID, MOE and other education stakeholders with information on reading outcomes, ultimately the EGRA findings are expected to inform decision making and management processes at the school level.
Cooperating Partners (Irish Aid, JICA, UNICEF, World Bank & China Fund-in-Trust/UNESCO)	These include other donors providing funds for education activities independently but aligned with the objectives of the Let's Read Zambia activity. In addition, donors such as Japan International Cooperating Agency (JICA) could potentially fund the mathematics component of Early Grade Assessments to complement the USAID funded reading assessment. Therefore, collaboration with these stakeholders will be necessary to ensure alignment of activities.

## C.6 LINK TO OTHER PROGRAMS

This activity will conduct the baseline and midline surveys for the separate bilateral USAID Let's Read Zambia Early Grade Reading activity. Let's Read Zambia will work with approximately 4,250 schools of which 1,281 have Early Childhood Education annexes or units, across five provinces (Western, Eastern, Muchinga, North-Western, and Southern Province). The five provinces have approximately 425 zones, made up of a cluster of approximately 10 schools within each zone. The school focus will be on Pre-Grades through Grade 3. Let's Read Zambia's focus will be to provide the target school students with

the opportunity to learn to read grade level text with comprehension in the seven local official languages of instruction as described in Table 32.

TABLE 32: OFFICIAL LANGUAGES OF INSTRUCTION IN THE FIVE TARGET PROVINCES

Province	Official Language of Instruction
Eastern	Chinyanja
Western	Silozi
Muchinga	Icibemba
North-Western	Lunda, Luvala, Kiikaonde
Southern	Chitonga <sup>19</sup>

## C.7 SCOPE

The USAID Education Data Activity will focus on two main areas:

**C. EGRA:** The EGRA will be administered at the baseline and midline for the upcoming USAID Early Grade Reading activity. Through the EGRA, USAID will be able to determine if the USAID Early Grade Reading activity is helping to ensure that children are reading at grade level.

To ensure that the assessment planning and implementation are sustained by the government, the contractor must work closely with ECZ. The contractor must build on the work done by RTI, the *Read to Succeed* and *Time to Learn* activities to strengthen the ECZ's capacity to conduct future EGRA.

2. Research services: Four distinct research studies will be conducted to inform USAID and MOGE programming needs. This is discussed in Section.C.8.

## C.8 TASKS

The tasks under this activity are to:

- Complete a language mapping exercise;
- Complete preparation for the EGRA;
- Complete pilot assessment;
- Finalize EGRA instruments;
- Train EGRA Assessors;
- Conduct EGRAs;
- Complete data entry, analysis, and build ECZ's capacity;
- Disseminate EGRA results to key stakeholders; and
- Conduct Research Studies;

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<sup>19</sup> Parts of Kazungula district are predominantly Silozi speaking.

### Task 1: Language Mapping Exercise:

The contractor must ascertain whether the predominant language of instruction within each district, and if possible, school level, is as depicted in Table 32, under C.6 of this section. The purpose of this exercise is to inform the contractor to be able to administer the EGRA in the GRZ designated language per province; however, also have the ability to administer the EGRA in a different GRZ designated language(s) if the Contractor identifies that is the language of instruction in the particular school/district. The Contractor must verify GRZ designated language(s) of instruction at the school level through the baseline and adjust the language mapping based on findings. If the contractor finds instances where the language of instruction is outside of the GRZ designated languages, they must validate and document such findings through the baseline.

### Task 2: Preparation of Draft Instruments to conduct EGRA:

Through the RTI-implemented EdData II activity, a framework/toolkit (link provided in Section J) was developed to serve as a resource on EGRA instruments development and adaptation for Zambia. Building on this work, the contractor shall review and if necessary, update the EGRA Framework to ensure that best practices and lessons learned at baseline and midline are incorporated.

The contractor must prepare for the EGRA by working with the USAID, MOE, and ECZ in order to define the components listed below. The coordination with the three stakeholders will result in a draft standardized instrument for the contractor to carry out the EGRA within the GRZ designated languages of instruction.

### EGRA Components:

#### Component 1: For the learners (child)

- *Letter-sound Identification:* The ability to produce the sound of a letter fluently that is presented in written form. It is timed to one minute.
- *Syllable naming fluency:* The ability to identify the most commonly occurring syllables in a particular language. It is timed to one minute.
- *Invented (nonword) reading:* ability to “decode” unfamiliar words. The “nonwords” are decodable, are ‘legal’ words, and are fictional. It is timed to one minute.
- *Oral reading fluency:* The ability to quickly and accurately read connected text on a page with the passage written for an end of Grade 2 difficulty level. It is timed to one minute.
- *Reading Comprehension:* The ability to orally respond to both literal and inferential questions about the oral reading fluency passage read. This component does not have a time limit.
- *Listening comprehension:* The ability to comprehend an orally presented story and provide an oral response to question asked. This component does not have a time limit.
- *English listening comprehension:* The ability to comprehend an orally presented story and provide an oral response to question asked. This component does not have a time limit.
- *English vocabulary:* The ability to identify body parts, objects in the environment, and simple prepositions presented in English. This component does not have a time limit.

#### Component 2: Snapshot for School Management Effectiveness (SSME)

This component of the EGRA will produce a comprehensive picture of a school’s learning environment, and when the results from multiple schools in a region are compared, it becomes possible to account for differences in school performance. Using information generated through the SSME component, school district, provincial, and/or national administrators can learn what is occurring in schools and classrooms and assess how to make their schools more effective. Among others, the complementary instruments will target education administrations including, head teachers, teachers, and zonal personnel.

### School Profile:

Along with the components above, the contractor must collect and update the following data on each school where the EGRA is conducted:

- Name of school
- Name of head teacher
- Contact details
- Location (province, district, and zone)
- Type of school (community or public, with or without Early Childhood Education (ECE))
- Government of the Republic of Zambia (GRZ) designated language of instruction
- Education management information system (EMIS) number
- Total number of students (disaggregate by sex, grade)
- Total number of teachers (disaggregated by sex/trained by Let's Read Zambia)
- Literacy teaching and learning materials (pupil: book ratio)

### USAID Indicator:

<b>ES.1-I-1</b>	Percent of learners who demonstrate reading fluency and comprehension of grade level text at the end of Grade 2 with U.S. Government assistance
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USAID may require additional indicators that will be identified through the life of the award, if applicable.

### Component 3: Oral Language Module

This component will produce baseline data through a small pilot in one GRZ designated language to be administered orally during the EGRA baseline. The Oral Language Module pilot assessment will help understand whether the children both speak and understand the language to determine whether the learner understands what he/she is being asked and his/her ability to follow directions in the assessed language, and to identify the logical expression of ideas arising from visual stimuli associated with events or stories.

#### Task 3: EGRA Pilot Assessment

A small-scale assessment will be undertaken with the draft EGRA for all GRZ designated languages of instruction. No more than 15 schools in total that represent the GRZ designated language of instruction will be assessed in this task—on average two schools per language. The pilot assessment will allow the contractor to understand if the draft EGRA needs updating and/or if the components need further improvement to properly measure reading performance at Grade 2.

#### Task 4: Finalization of the Instruments to Conduct EGRA

The contractor must provide the feedback from the pilot assessment to USAID, MOE, and ECZ and apply lessons learned to finalize the standardized instruments to be used in the EGRA.

#### Task 5: Assessor Training

Each EGRA must be administered by an assessor not associated with the school. The contractor's approach to administering the EGRA must ensure the child's comfort and provide an environment which is conducive to obtaining needed information under each component. The contractor is responsible for identifying and providing rigorous training to the assessors. A key consideration in the recruitment of assessors must be familiarity with the local language of instruction.

A few assessors must also be trained to conduct oral language module in one GRZ language during the EGRA baseline.

#### Task 6: Conduct EGRA

The contractor must conduct EGRAs in an electronic format via tablets or other electronic means. The contractor is responsible for random sampling for about 800 schools during baseline and up to 25 percent of approximately, 250 schools at midline. The schools are located in the 425 zones in 56 districts in the 5 target provinces. The contractor's random student sampling must consist of up to 20 students per school. Prior to conducting the EGRA, the contractor must provide the random school listing and schedule to USAID to obtain proper approvals from the MOE.

Each EGRA must be administered in the GRZ designated language of instruction for the province. However, if it is determined that multiple GRZ designated languages of instruction are in use, the contractor must be able to administer the EGRA in each GRZ designated language and document instances where the provincial GRZ designated language of instruction do not match the school level language of instruction in use.

Also, during the EGRA baseline, the contractor will adapt an Oral Module Tool into one GRZ language and conduct a small-scale pilot assessment in one GRZ designated language of instruction. Up to 10 schools covering up to 200 Grade 2 learners in total will be assessed through this pilot.

Each EGRAs must be completed by November 30th. The following schedule is developed for the anticipated EGRAs:

Baseline	The Baseline and Oral Language Pilot is to be started within six months after award and completed by December 30th.
Midline	The Midline will be timed after about two years of implementation under Let's Read Zambia.

The contractor must work with ECZ to help transition the ability to lead, manage, and execute the EGRA over time. USAID expects that the contractor must be the lead on the baseline, allowing ECZ to shadow all aspects of the EGRA. For the midline, USAID expects the contractor to identify specific tasks for ECZ to complete in conjunction with the contractor that make up approximately 50 percent of the EGRA. Through the proposed transition approach, the contractor, in consultation with USAID, will determine the roles and responsibilities to gradually transfer EGRAs to the ECZ. The contractor must immediately notify USAID if ECZ is unable to take on any responsibilities and ensure that all EGRAs are completed. The ultimate responsibility for timely completion of EGRA and data analysis is with the contractor.

#### Task 7: Data Entry, Analysis, and ECZ Capacity Building

The contractor must analyze and consolidate data to produce the final EGRA reports. The contractor must involve ECZ and MOE experts to foster sustainability of the project and build capacity within the ministry for data collection and analysis. All data collected must be stored on the Development Data Library (DDL) and the USAID Secondary Analysis of Results Tracking (SART Ed) Portal <https://usaieducationdata.org/sart/>.

ECZ will specifically need capacity building in data collection and analysis, conducting large scale assessments, and data management. The contractor must develop a transition/capacity building strategy clearly outlining the proposed transfer of roles and responsibilities over the three year and six-month contract period. The plan must document what the ECZ would require to conduct similar surveys in the



future and, must include a tentative implementation plan and estimated costs for routine and nationally representative EGRA.

#### Task 8: Data Dissemination

After each EGRA, the contractor must disseminate findings and analysis to a larger stakeholder audience. The dissemination meetings will address the findings as they relate to the intended learning outcomes of students and the proposed performance targets/indicators for Let's Read Zambia. USAID expects the same approach as stated under Task 6; whereby, the contractor must work to have ECZ become the lead in disseminations and only provide administrative and technical oversight towards the final EGRA dissemination meeting.

Baseline	Provincial/district/zone dissemination
Midline	National/provincial/district dissemination

#### Task 9: Research Studies

The contractor will provide up to four distinct research projects. The contractor must work closely with USAID and the MOE to determine which of the areas of research listed below and/or any other study areas identified would be most beneficial to address programming needs and provide the best support to address the problems faced by the MOE. The contractor must then help the MOE conduct this research. This will include both desk review and primary research on topics that directly impact learner outcomes in early grade reading in Zambia. Potential areas of research could include:

The value-added of students using technology to improve learners' performance; A comparison of the impact on student learning with teacher use of tablets with lesson plans and coaching guidance versus student use of tablets;

A study that follows kindergarten students over time to determine the impact of emergent literacy skills interventions; and,

A study on the threshold when students should transition from language one (L1) to language two (L2) or from the local languages to English.

A study on association between oral language and oral reading capacity of Grade 2 learners

### C.9 GENDER

The USAID/Zambia's gender analysis identified that gender bias and inequitable learning conditions in Zambian schools continue to undermine educational achievement for both boys and girls. Poor educational outcomes exacerbate gender inequalities and often leave young Zambians with few skills allowing for participation in the economy. The national EGRA baseline conducted in November 2014 identified that there are only minimal achievement differences between boys and girls in the early grades. It is more cost-effective to address the causes for the divergence in learning outcomes in the early grades when these differences are small than to wait for girls to drop out, repeat, or fail their school exams. It is expected that the contractor must assess the extent to which Let's Read Zambia ensures that learning gains benefit both males and females and in all language groups. Let's Read Zambia will help reduce perceived learning gaps along gender and linguistic groups. The report must describe ways in which Let's Read Zambia is working to narrow gaps between boys and girls and among the different languages of



instruction and any success or challenges encountered. Data must also be disaggregated by sex, type of school and other categories required by USAID.

## C.10 ENVIRONMENTAL COMPLIANCE

The Foreign Assistance Act of 1961, as amended, Section 117 requires that the impact of USAID's activities on the environment be considered, and that USAID include environmental sustainability as a central consideration in designing and carrying out its development programs. This mandate is codified in Federal Regulations (22 CFR 216) and in USAID's Automated Directives System (ADS) Parts 201.5.10g and 204 (<http://inside.usaid.gov/ADS/200/204.pdf>), which, in part, require that the potential environmental impacts of USAID-financed activities are identified prior to a final decision to proceed and that appropriate environmental safeguards are adopted for all activities.

The USAID Zambia Education Initial Environmental Examination (IEE) has a Categorical Exclusion for the Intermediate Result (611-IR3.1) Educational Achievement in Reading Improved. The IR is supported by four sub-IRs: (3.1.1) Ministry of Education Science, Vocational Training and Early Education (MESVTEE) systems strengthened; (3.1.2) Public and community school performance increased; (3.1.3) Equitable access to education increased; and (3.1.4) HIV/AIDS impact on education mitigated.

A Categorical Exclusion is recommended for activities under sub-IR's 3.1.1, 3.1.2, 3.1.3, 3.1.4 under Program Element 3.2.1 Basic Education, involving education, technical assistance, or training programs (as per 22 CFR 216.2(c)(2)(i)); analyses, studies, academic or research workshops or meetings (as per 22 CFR 216.2(c)(2)(iii)); document and information transfers (as per 22 CFR 216.2(c)(2)(v)); studies, projects or programs intended to develop the capability of recipient countries to engage in development planning (as per 22 CFR 216.2(c)(2)(xiv)); and regulatory and policy related activities that have no physical interventions and no direct effects on the environment (as per 22 CFR 216.2(c)(1)(i)).

Activities under Program Element 3.2.1 Basic Education, involve education, technical assistance, or training programs; analyses, studies, academic or research workshops or meetings; document and information transfers; studies, projects or programs intended to develop the capability of intended beneficiaries or local governance structures to engage in development planning; and regulatory and policy related activities that have no physical interventions and no direct effects on the environment. These activities are recommended for a Categorical Exclusion under 22 CFR 216.2(c)(1)(i) and 22 CFR 216.2(c)(2)(i), (iii), (viii) and (xiv). See above citations

The contractor must comply with the stated environmental regulations. The program managers and the contractor must take measures to ensure such information sharing does not promote practices that would negatively impact the environment and that the information sharing sessions themselves have negligible impacts on the environment.

## C.11 SUSTAINABILITY

To ensure sustainability, the contractor must build the institutional and human capacity of the ECZ to independently conduct national early grade reading assessments and provide timely information about student reading competencies. The contractor must train ECZ Officers in developing EGRA contextual questionnaires, data collection and analysis using agreed upon software, large scale assessment, and data management. Institutionalized capacity building is in line with the USAID Education Project's two main hypotheses: 1) improving the overall quality of primary education requires improving basic reading skills in early grades; and 2) facilitating host country leadership of the development agenda is critical for long-term sustainability and true sector-wide impact.

## ANNEX 7. EGRA TOOLS

EGRA tools can be accessed by clicking object included below.

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